

ART. II.—*Journal of a trip through Kunawur, Hungrung, and Spiti, undertaken in the year 1838, under the patronage of the Asiatic Society of Bengal, for the purpose of determining the geological formation of those districts.*—By THOMAS HUTTON, Lieut., 37th Regt. N. I. Assistant Surveyor to the Agra Division.

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PART I.

Towards the close of the year 1837, a proposal was made to the Asiatic Society of Bengal, to undertake, with their patronage and assistance, an expedition into the Spiti Valley, where the late Dr. Gerard, some years since discovered the fossil exuviae of marine mollusca; but which interesting discovery was never followed up by a close examination of the geological formation in which they occurred.

The proposal meeting with the approbation of the Society, I proceeded with as little delay as possible to Simla, whence in a few days having completed my arrangements, and procured all necessaries for the journey, I started on the 14th of May, 1838.

So many travellers have at various times passed over the first four stages of my journey, and the appearance and productions of the country from Simla to Kotgurh have been so often described, that it would be tedious to repeat the information already published; and I shall therefore pass over the four first stages of my trip and commence my notes from the military post of Kotgurh, where I arrived on the 19th of May.

Here previous to starting for Kunawur, I received a visit from a vuzeer of the Bussaher Rajah, who, at the kind suggestion of Colonel Tapp, the Political Agent, furnished me with some information regarding my route, and also sent with me one of his Churriahs or Chupprassees, to accompany me as far as Spiti, in order to procure provisions for my followers, and to give any assistance which his knowledge of the people and their different dialects would enable him to furnish.

From Kotgurh, the road winds down a steep and somewhat sudden descent of about four thousand feet to the bank of the Sutledge, along which it continues, with an occasional moderate ascent and descent, to the village of Dutnuggur, which is generally the first stage towards Rampore.

To avoid as much as possible the heat of the march, which along the bed of the river is little inferior to that of the provinces, I took the

*pugdundee*, or village road across the brow of the hill, by the village of Logo, where iron is procured, which is also a nearer route than by the descent to Kaypoo. A walk of about three miles and a half brought me gradually down to the Sutledge, where the thermometer which at Kotgurh at sunrise stood at  $54^{\circ}$ , now rose at ten o'clock A.M. to  $98^{\circ}$ ; this sudden change of climate from temperate to torrid was by no means an agreeable transition to a pedestrian traveller, with more than half his march still before him. Passing the village of Neert or Neertnuggur, a few miles farther on brought me to Dutnuggur, and the end of my day's journey, right glad to seek a rest and a shelter from the burning sun, beneath the grateful shade of a large burgut tree.

The presence of this beautiful tree is of itself sufficient to stamp the character of the climate of Dutnuggur, and looking around we find along with it the peepul, the bukkiné, the pomegranate, and the plantain, with many shrubs abundant in the hot provinces of India. All these, with the exception of the burgut, are indigenous to the soil, but that noble tree was long since brought from the plains by some traveller now many years dead and gone, and the date even of its arrival is now alike forgotten with the name of him who brought it.

Beneath the shade of its spreading branches I pitched my tent, and amused myself until the arrival of my baggage, with watching the parrots and minas as they threw down in showers the red fruit with which the tree was loaded; even in this delightful shelter the thermometer stood at  $92^{\circ}$ , while in the sun it rose to  $120^{\circ}$  at 12 o'clock.

Those who have figured to themselves the valley of the Sutledge to consist of a large river winding beautifully through a broad and fertile vale, well cultivated and studded with habitations and villages, will feel a degree of disappointment and surprise, on finding it in reality to be no more than a steep and rugged mountain glen of unusual grandeur, with a broad and rapid torrent roaring and foaming as it rushes impetuously along the bottom over the fragments of rock, which everywhere strew its bed, causing its waters to curl and rise in waves, which hurl the white spray on high, and give to the surface of the stream the appearance of a ruffled sea.

Broad and fertile valley there is none, but in its place are frowning hills rising high on either side from the water's edge, clothed, and that scantily, with tufts of grass and shrubs, while near their ragged crests are scattered dark groves of bristling pines, giving to the scene an air of stern and bold magnificence, which cannot fail to impress the traveller with an idea that some vast and more than usual agent has been the means of stamping the landscape with unwonted grandeurs.

The banks and bed of the river are thickly strewed with rolled and water-worn fragments of every size, from the pebble to the mass of many pounds in weight, and seemingly brought down from great distances, as many of them evidently belong to formations which do not occur in these lower parts.

Boulders of quartz of gypsum, hornblende and mica slates, porphyritic gneiss, sienite and sand stones, are heaped together in confusion along the river's course, while here and there above the stream are vast beds of the same rolled stones embedded in clay and debris. These are situated solely at the lower part of the valley, commencing a little above Rampore, and increasing in magnitude from thence downwards; they are chiefly, if not altogether, situated at those places where the river takes a rapid turn, and have evidently been thrown up or deposited in the back current or still waters of the deep floods, which must have brought down the sediment and stones of which they are composed. These vast deposits of alluvial matter are horizontal, or rather preserve the line of level of the river, and upon their wide and flattened surface the traveller is pleased to see a rich and smiling cultivation. These beds are sometimes far from each other, at other places they extend along both banks of the river, by the action of whose current they have evidently been severed. Upon such are the villages of Neert, Dutnuggur, Kaypoo, and many others on both banks built, and surrounded by a beautiful and luxuriant vegetation.

Rivers of the present day are known to accumulate and deposit large beds of sand and other debris in the eddies or back waters which they make when winding through rocks or strata of unequal hardness, but these deposits of the Sutledge are not the gradual accumulations of months and years, but from their massiveness and the enormous blocks or boulders which they contain, must evidently owe their origin to a larger body of water than is now supplied even in the rainy season; they must owe their origin to some vast and perhaps oft-repeated floods from the upper parts of the district, such as the sudden outpouring or bursting of some extensive lake, which has brought down and deposited vast fragments of rocks, whose true site is situated many miles from the deposits which now contain them, and which tower up for two and even four hundred feet above the river's present level.

To state here the causes from which these beds have sprung would be to anticipate, and we shall see as we travel onwards into Spiti, that a solution is presented in the appearances which that valley exhibits.

Towards evening, the clouds began to gather thick and heavily, and

thunder growled nearer and nearer, preceded by a gale of wind that nearly tore my tent away. The rain came drifting up the valley, and curiously, but very civilly, kept the opposite bank of the river to where I was encamped, shrouding the mountains from my sight as it passed along, without even giving me a sprinkling.

The harvest had commenced at Dutnuggur as also at Kotgurh, and the sickle was in the field. In some instances the reaper and the plough were at work on the same ground, the one preparing the soil for the second crop, almost as soon as the other could gather in the first one. The first crop here consists, as in all these lower parts, of barley, wheat, poppies, and some minor grains, which are ripe in the months of May and June, when the fields are again made ready and sown with the autumn crop.

On the morning of the 21st, I resumed my pilgrimage by a good broad road along the left bank of the river, and a walk of nine miles brought me to Rampore, the capital of Bussaher.

After leaving Dutnuggur, there is scarcely any cultivation on the left bank of the Sutledge, owing to the rocks rising more abruptly from the stream, between which and their own base there is sometimes little more breadth than what is occupied by the road; at Rampore, although the town stands upon a broad flat at a turn of the river, there is no cultivation, except a few gardens in which the *burgut* again appears.

This place is therefore strictly speaking a manufacturing town, where those of its inhabitants who are not engaged in travelling with grain into Ludak and Chinese Tartary, are employed in the manufacture of *pushmeena chuddurs*, which are made from the under wool of the Tartar goats, called by the people "pushm" whence the word "pushmeena". These chudders or shawls are sold according to their quality and texture at from fourteen to twenty-five rupees each.

Rampore is also the winter residence of the Rajah; and is selected on account of the mildness of its climate at that season. To avoid the great heat which it experiences in summer, he usually repairs with his court to Sarahun, which from its greater elevation is free from such intense heat as is felt at Rampore, whose elevation is only 3,400 feet above the sea, while Sarahun is rather more than 7,000 feet, or about the height of Simla.

It is here that in the beginning of November the great fair is held, which draws together the people from the upper hills to barter the produce of those elevated tracts for that of the lower hills and plains. Here may be seen commingled in one grotesque assemblage the Tar-

tars of Hungrung, of Spiti, of Ludak and Chinese Tartary, with the inhabitants of Kunawur, of the lower hills and plains, and sometimes also with those of Europe.

Among these different tribes little or perhaps no money is exchanged, but the dealer in tobacco or grain offers to the seller of wool or woollen cloths an equivalent quantity of merchandise for that which he requires, and thus in a very short time the produce of either country or district has changed masters.

The greatest good humour and mirth prevails at this periodical "gathering of the clans," and few quarrels occur. Should two dealers however happen to fall out, or, as sometimes occurs, should the wine cup have been used too freely and broken heads ensue, the Rajah levies on the disturbers of the peace a fine according to the circumstances of the delinquents, which is paid in anything they may possess, whether money, sheep, or merchandise.

At this season the articles brought into the market from the upper hills, are blankets and sooklat from Lubrung, Khanum, Soongnum, and other places in upper Kunawur;—raisins, neozas, cummin seed, sheep, goats, and ghee from the lower parts;—chowrees, birmore, pushm wool, byangee wool, silver and gold dust in small quantities, borax and salt, numdahs, &c., from Ludak and different parts of Tartary.

These are exchanged for opium, celestial barley and wheat, tobacco, iron, butter, ghee, treacle or ghoor, linen cloths, brass pots, &c. all of which meet with a ready and profitable sale in the upper parts of the country.

Within the last three or four years, the traders from Ludak have purchased opium, which they did not take previously. Ghee is not purchased for Ludak or Tartary, but butter is taken instead, and forms a great ingredient in the mess, which they make of tea and flour, and which forms their food, as the chupattee or bannock does that of the low country people. It is purchased at Rampore at about eight seers for the rupee, and sells again in Tartary at four and five seers, so that cent per cent is no uncommon profit on this one article. Tobacco is also in great demand, and always brings a good profit to the trader.

Of the different articles manufactured in the upper parts, I shall again have occasion to revert in speaking of the several places where they are made, and I shall therefore pass on to the Rajah and his court, ere I take leave of the capital, and plunge into the woods and forests of Runawur. The Rajah is an ugly, common looking fellow, of about thirty years of age, and is of the Chuttree caste of Hindoos.

He is married, but has no legitimate offspring to succeed him, although he has a son and a daughter by some mistress or frail damsel, who doubtless, like a highland lassie of the olden time, would have thought it a crime to refuse the laird anything in her power to bestow. Should he die and leave no legitimate heir to succeed him, his territories will fall to the British Government.

He has three chief vuzeeers who manage the affairs of his territories, and who in time of war would take command of his forces, as it is contrary to the custom of the country for the Rajah to do so in person. These three are equal in rank, and their office is hereditary.

Below them are several inferior officers also called vuzeeers, whose office is not hereditary, but who are elected or rather nominated by the Rajah annually, and they seem to be thannadars of different pergunnahs; among this class is Puttee Kaur, Dr. Gerard's friend, who has lately been appointed vuzeer of Hungrung. The personal attendants or immediate household of the Rajah, consists of two sets of men called Churriahs, and Hazrees.

The Churriah derives his name from part of his duty being to carry the Churree, or silver stick, on occasions of ceremony before the Rajah. His duties are chiefly those of a Chupprasseer, and he is sent into different pergunnahs to collect the revenue, to report any misconduct, and to see that the people are equitably assessed, that is, to point out who may be taxed more heavily, and who should be excused,—and in fact, to ferret out and report to the Rajah the conduct and circumstances of all his subjects.

Those who are smart, and acquit themselves to the satisfaction of their chief in this system of espionage, are usually high in favour, and receive occasional substantial presents in token of his approbation, while those who are lukewarm, lazy, or who are wanting in tact, get nothing but their trouble, for the Rajah gives no pay to his servants, their services on the contrary being compulsory.

The Churriahs form a body of from sixty to eighty men, never exceeding the one or falling short of the other number; they have three officers who, in the language of the country, are called "Pulsur," "Buttoongee," and "Naigee," answering to Soobadar, Jemedar, and Burkundauze. They are exempt from military service, and remain with the Rajah. They are drawn from the district of Kunawur, and are compelled to obey summons, unless it graciously pleases his Highness to excuse them, in which case however he takes good care to exact a fine for their non-attendance.

Some wisdom is shown in the selection of this body, as none are

taken but men in easy circumstances, who possess either lands or flocks, the Rajah rightly thinking that those who are well off, will be more likely to keep a sharp eye on the discontented or troublesome characters, than those who have all to gain, and nothing to lose. He has also the satisfaction of reflecting that in case of misconduct they possess the means of paying a heavy fine.

The Hazrees are a larger body of men than the Churriahs, and they sometimes perform the same duties, but in general they act as Chowkeydars or guards to the Rajah, being distributed round his camp or his palace by night, in a chain of sentries. They consist of one hundred and forty men, and have one officer called a "Gooldar"

Of their number, however, no more than forty or fifty of the smartest are required to be in attendance; the others are suffered to remain at home. They are fighting men, and in time of war would join the forces.

There is no standing army or any regular soldiery since the British Government extended its protection to Bussaher, and even before that time it resembled an half-armed mob, rather than a military force, having no uniform, and each man being armed according to circumstances, some with matchlocks, some with swords, and others who possessed neither, arming themselves with sticks and branches of trees.

This rabble was commanded by the three vuzees if the enemy was in force, or by two or one according to the exigency or trifling nature of the disturbance.

The Rajah pays a tribute of 15,000 rupees annually to the British Government, which is levied in coin on the inhabitants according to their circumstances, some paying two annas, others four annas, and onwards to ten rupees, which is not exceeded except by the three vuzees who pay twelve rupees each annually.

The amount of private revenue which the Rajah himself derives from Bussaher is very uncertain, and cannot be fully ascertained as it is paid in kind, consisting of lambs and kids, blankets, and other manufactures, wool, neozas, raisins, and rice from Chooara, across the Burenda pass, which is I believe the only grain he receives. If the season be bad and the flocks are sickly, or the young ones die, that portion of the revenue is excused for that year, and so likewise if the fruits or crops fail, so that his revenue varies according to the goodness or unfavourableness of the seasons. It may perhaps be roughly computed at from fifty to fifty-five thousand rupees annually.

For crimes and misdemeanours, fines are levied according to the

nature of the offence and the circumstances of the offending parties, these fines though nominally amounting to a certain number of rupees are always levied in goods.

Thus when the village of Junggee in Kunawur neglected to furnish me with coolies to carry my baggage, the Rajah ordered a fine of one hundred rupees to be levied on the inhabitants, which was to be realised in anything they had to give. The same punishment would have been inflicted on the Churriah who accompanied me to Spiti, had he refused to go. When the Rajah ordered him to prepare for the journey, he was on his way to Simla, to be present at his master's interview with the Governor General, and having already been in Spiti he felt no desire to return to it, consequently he declined going, and offered to pay a fine of five rupees if the Rajah would excuse him and appoint somebody else; but the Rajah turning to him said,—No, no, if you disobey my orders I shall not ask for five rupees, but make you pay one hundred. This was enough, for bad as was the prospect of a journey into the dreary district of Spiti, far worse for the Churriah would have been the infliction of such a fine, and he therefore departed without another word.

From Rampore to Gowra, the next stage is a long and fatiguing ascent all the way. The road winds up the side of a very steep hill, and is strewn with blocks of stone, so thickly in some places as to resemble the bed of a torrent rather than the high road between the Rajah's summer and winter residence.

The first part of the ascent is over a nearly bare hill, but the scenery improves farther on, and the way is cheered by the occurrence of a scattered forest of oaks, mulberries, rhododendron, and the "Pinus excelsa" or Cheel. From the crest of the ascent, a pretty view is obtained of the surrounding country; a small amphitheatre is spread beneath, the foreground consisting of gradually sloping hills shelving away towards the river, which winds along unseen below. This slope was studded over with the bright hue of the ripening crops, while round them rose thickly wooded hills, backed in their turn by the dazzling splendour of the snowy range.

From the brow of this hill the road dips suddenly down again into a thickly wooded dell, from whence it rises on the opposite side to the village of Gowra. Thinking to avoid this second ascent, I followed a bye path through the forest, and a precious scramble I had of it. The soil was so thoroughly impregnated with decomposing chlorite, that it was with some difficulty I could manage to keep upon my feet, from the greasy saponaceous nature of the rock; and when at last I



reached the stream at the bottom of the glen, from which the road again ascended, I found that the pugdundee I had chosen to follow led along the side of a hill which was daily yielding to the weather, and falling down in masses, which left a nearly perpendicular mural cliff to scramble up. Hands and knees were in some places necessary in order to avoid slipping back again, and this by the greatest exertion. We passed over some masses which the weather had detached, and which were actually tottering to their fall, and were hanging almost by nothing over the deep glen below. On my return to this place, two months and a half afterwards, in the rains, these masses had all been hurled down, and their fragments were scattered in the bed of the stream; yet another pathway had been made by the villagers to save a mile or two, and it is doubtless doomed, like its predecessors, to fall at no distance of time into the glen. This time I preferred the steepness of the road, to the wet and slippery pugdundee. We managed however to get over safe enough, and my people gave me Job's comfort, by telling me there were far worse roads ahead! Save me, thought I from bye paths in future, and I felt by no means inclined to exclaim with the courtier in *Bombastes*, "Short cut or long, to me is all the same!"

Gowra is a small village, and contains but few houses. It is situated far above the Sutledge, which winds along unseen in the depths below, and the hoarse roar of its turbid waters is even scarcely heard. Here were apples, apricots, mulberries, and citrons bearing fruit, and the barley was nearly all carried from the fields.

In the woods around the village plenty of game is found, such as the monal, college pheasant, black partridge, and chikore. At this place I halted on the 22nd of May, and the next morning after a walk of an hour and a half arrived at a small village called Mujowlee, where I again encamped, as the rest of the way to Sarahun, which is the proper march, was all up hill, and had I attempted it, my baggage and tent would not have arrived until night, and I should have got no dinner into the bargain, which to a traveller in such a country is by no means either pleasant or comfortable. The road from Gowra to Mujowlee is very good indeed, and vies in some places with those of Simla; it lies through very pretty woods of oak, firs, mulberry, and many others common to the lower hills; the wild dog-rose with its snowy flowers, spreading over the tops of the underwood or climbing high into some tall oak, was in abundance, and almost every villager had a thick roll or necklace of the flowers hung round his neck, or stuck in a bunch on one side of his bonnet.

From Mujowlee we descended into a steep khud or glen, at the bottom of which by a frail and ricketty sangho of twigs, which is continually carried away by the rise of the waters, we crossed a stream which runs down and joins the Sutledge about a mile or two lower. From this we toiled up a long and steep ascent on the side of a hill, very prettily wooded with oaks, firs, horse chesnuts, walnuts, peaches, apricots and bukkines, intermingled with the raspberry, blackberry, and white dog-rose. The number of fine mulberry trees which for the last few marches had every where occurred near villages, led me to inquire if the silk-worm was known to the people, and if so, why they did not import and cultivate it. Such an insect it seemed had been heard of, but nobody appeared to know what it was like, nor had any one ever thought of introducing it to the hills; and the reply was, "We are hill people, what do we know of silk-worms?"

Nevertheless I see no reason why the insect should not thrive well in these villages along the Sutledge, where the summer enjoys a warmth unknown to Europe, and where the winter is certainly not so severe as in our native land. Food for the insect is in abundance, and is at present useless. At Simla, in the summer of 1837, I saw many caterpillars of a species of silk-worm feeding on a mulberry tree, in a garden there, which shows that very little care would cause it to become an useful article of trade in the lower hills. It is indeed very probable that the insect does already occur in the places I have alluded to, although it is at present unknown to the inhabitants, who are too busily employed in the cultivation of their fields to bestow a thought on "Entomology!"

Were the insect introduced, and the people instructed in its management, which could be easily done by sending skilful hands from the plains, I have no doubt, from conversations which I held with them on the subject, that they would gladly give their attention to its cultivation; but the introduction of it must be made by those who are in some authority, as the people themselves are far too poor to run the risk of expense which any experiment might entail upon them.

After gaining the summit of the ascent from Mujowlee we leave the pergunnah of Dussow, and drop over the frontier ridge of the district of Kunawur, arriving by a short and gradual descent at the town of Sarahun.

This is the usual summer residence of the Bussaher Rajah, who flies from the heat of his capital in the month of May, and returns again in time for the annual fair of November.

The elevation of Sarahun is about 7,300 feet above the sea, and it

is situated in a beautifully wooded recess or amphitheatre formed by the hills advancing round it in a semicircle behind ; while in front they slope down in the direction of the Sutledge, from which again on the opposite bank rise the dark and usually barren hills of Kooloo.

The heights all round were in the month of May still deeply covered with snow, which however does not remain, but melts away as the rainy season sets in.

The village of Sarahun, for it cannot be called a town, has a shabby and ruinous appearance, and except at the season when the Rajah honors it with his presence, is nearly deserted. It boasts of no manufactures. At the time of my arrival the Rajah had gone to Simla to wait upon the Governor General, and having on this occasion drawn around him his retainers, the place was left with scarcely an inhabitant, except a few old women and children.

Journeying onwards from Sarahun, the road was at first tolerably level and easy, but after a mile or two it changed to a steep ascent over stones of all sizes, and sometimes overhanging the khud at places where the weight of snows had caused the whole to slip down, and where a plank or the trunk of a tree had been thrown across the gap to supply the deficiency.

The whole way was however very pretty and well wooded, and we crossed two or three streams which came rushing down from the snows on the heights, to join the Sutledge below us. One of these streams at eleven A. M. had a temperature of 45°, while the air at the same time was at 89°. From the ridge of the hill we descended for some way through a beautiful forest, in which at last, after a walk of eight good miles, we encamped at noon, surrounded by oaks, rhododendra, walnuts, horse chesnuts, apricots and mulberries ; many of the horse chesnuts were magnificent trees, and covered with their conical bunches of flowers, which with the scarlet blossoms of the rhododendron arboreum, gave a pleasing effect to the surrounding scenery. In one part of the forest we found vast beds of a large flag iris in full bloom, and quite distinct from the small species which I saw on my way to the Burrenda pass in 1836. It is not perhaps generally known that the fruit of the horse chesnut produces a beautiful and permanent dye, and as it may be procured in some abundance in the hills, the following recipe, taken from the Saturday Magazine, may not be unacceptable to those who residing in the hills, may wish to avail themselves of the produce of the country.

“ The whole fruit of the horse chesnut cut in pieces when about the size of a small gooseberry, and steeped in cold soft water, with as much

soap as will tinge the water of a whitish colour, produces a dye like anotta; the husks only, in the same manner with cold water and soap, produce a dye more or less bright according to the age of the husk. Both are permanent and will dye silk or cotton, as much of the liquor as will run clear being poured off when sufficiently dark."

During the past night at Sarahun we experienced some heavy showers of rain, accompanied by thunder and lightning which cooled the air, and gave us a delightful day to travel in. Many of the heights which before had begun to look black from the melting of the snows, were now again completely covered with a sheet of dazzling whiteness. The day continued cloudy with some heavy showers in the afternoon, and snow appeared to be falling heavily over all the neighbouring peaks.

Several flocks of sheep and goats passed our encampment during the day, on their way from Rampore to the upper parts of Kunawur; each animal was laden with flour, which is carried in small bags thrown across their backs and confined there by a crupper and band across the chest, with another under the belly, answering the purpose of a girth. Each carries according to its strength from six to twenty seers\* in weight, and they form the chief beasts of burthen throughout the country, travelling ten and twelve miles daily with ease and safety over rocky parts where mules and horses could not obtain a footing.

From this encampment we continued our march, still through the forest, to the village of Tranda; the road in many places was very precipitous and rocky, and numerous rudely constructed flights of steps occurred at those places where the ascent was too abrupt and rocky to cut a road. Before climbing the last steep hill to Tranda we came to a deep glen, with a roaring torrent hurling itself along towards the Sutledge with headlong fury; over this had once been a goodly sangho bridge, composed of three trees thrown across from rock to rock, with planks of wood nailed transversely across them, but the weight of the winter snows had thrown the bridge all on one side with an awkward slope to the gulph below, and had torn half the planks away, leaving wide intervals at which there was nothing left to walk on but the round trunk of a single tree; and the dazzling foam of the waters seen beneath as the torrent rushed along, imparted to the passenger the feeling, that the crazy bridge was gliding from beneath his feet, and made it dangerous to attempt the passage. Two only of my people crossed it, and they were laughed at for their folly.

\* A seer is 2 lbs.

A flock of sheep arriving while we were deliberating on the best method of crossing the stream, decided our plans at once. It was impossible for even these sure footed animals, laden as they were, to cross in safety, at least their owners would not run the risk; and in a short time therefore young trees were felled and placed across a narrower part of the stream, and covered over with bundles of twigs laid on transversely. Over this the sheep led the way unhesitatingly, and we followed in their wake. From this we climbed the ghat to Tranda, where I encamped amidst a forest of majestic Kaloo pines. From Tranda I proceeded to Nachar, a pretty walk of about eight miles, some parts being steep and rugged. The road at first ascended for a short distance, and then turning round the hill brought us to a steep descent, down which it fell somewhat abruptly in a zigzag manner to the bottom of a wooded glen. In many parts it wound backwards and forwards so suddenly, from the steepness of the hill, that on looking upwards it was no pleasant object to behold the long train of my baggage coolies slowly winding downwards in a zigzag line above my head, and while thus standing below the crazy looking scaffolding, which in many places formed the road, I could not help thinking to myself, "If those fellows with their loads should chance to come tumbling through, how terribly they would spoil the crown of a certain gentleman's hat,"—and the feeling made me hasten on to avoid the fancied, but not improbable danger.

Nachar is a small village situated at some height above the Sutledge, on the slope of the left bank. The thick forests and rocky glens from this place downwards to Sarahun, may be deemed the head quarters of the *Gooral* and *Thar* antelopes, the latter being known here by the name of "*Eimoo*." Thèr, and black and red bears are also met with, the first and last inhabiting the higher and colder portions of the range.

Bears are not found generally throughout Kunawur until the season when the grasses are ripening, and it then becomes a matter of great difficulty to prevent the vineyards being robbed at night.

Large dogs and men at this season keep nightly watch, making a continued shouting and firing of matchlocks to keep off the invader. They also commit sad havoc in the autumn crop of phuppra. At other times they are said to retire to the higher parts of the forests, where they lie concealed among the deep caves of the rocks, feeding on various roots and acorns. The Thibet bear is abundant on the heights above Nachar, as also the red variety. Here they are both said to attack and kill sheep and goats, and they are often such a

nuisance that it is considered a feather in a man's cap to shoot one. The elder brother of the Churria who accompanied me to Spiti had killed no less than fifteen bears, and was looked upon as a Nimrod in consequence.

The red variety is said to differ in nothing from the common black or Thibet species, except that it is red while the other is black. Both are said to possess the white band across the breast, but that it is constant in neither. I strongly suspect that subsequent research will prove that there are at least *two* if not *three* distinct species in these hills, namely, the Thibet bear, the red bear, and another black species without the white crescent on the breast, of smaller size and greater ferocity.

The natives say, both black and red live together in the same haunts, and that when both come down to feed at night in the vallies, the red one does not always return to the heights, but remains in the lower haunts of the black bear. If this statement be correct it would argue a greater difference in the species than that of colour, for why should climate act on some and not on all, since all are in turn found equally near the snows. If colour were the only difference, then the red one by staying in the haunts of the black bear would resume his former colour, and the black one by going to the heights would become red; but as this is said not to be the case, and that both black and red can reside together either high or low, it goes far to prove a specific distinction; the red bear is however found chiefly near the summits of the ridges, while the black one inhabits the lower and more wooded tracts in the thick forests of oak, where they feed upon the acorns and other fruits. Both species in the autumn make nightly incursions into the fields of phuppra, which they destroy in quantities, and they also in the summer approach the villages and steal the apricots.

In the winter time when food is scarce they are said to tear down the wooden hives, which are built into the walls of the houses, and to devour the honey, nor is this the extent of their plundering, for they have been known to force open the door of the sheep house, and run away with the fattest of the flock. A lad who accompanied me, hearing the questions I asked regarding these animals, very gravely declared that when the bee-hives were too high to be reached from the ground, the bears went to the forest and brought a long pole, which they planted against the wall and used as a ladder! We all laughed at this thumping fib, which was evidently made for the occasion, but he only persisted in it the more, and at last swore that he had seen them do so!!

Some are said to store their dens with grass and herbs, in which they keep themselves warm during the prevalence of the snows; others select the hollow trunk of some large decaying tree in which they form a similar warm bed. This however I look upon as a fable. There are not many about Cheenee and Punggee, and above those places they are not founded; the greatest numbers therefore inhabit the lower parts of Kunawur.

During the winter in those parts where the Emoo, the Gooral, and the Thér are found, it is the custom when the snow has fallen somewhat deeply, so that the animals cannot avail themselves of their natural speed, for parties of eight and ten men to assemble with their matchlocks and sally forth to the chace, guarding their legs from the snow by two pairs of woollen trowsers, and a warm thick pair of woollen shoes. He who is lucky enough to get first shot at the quarry is entitled by the rules of the Kunawur sporting clubs, provided he has fired with effect, to the skin of the animal, and the rest of the party share equally of the flesh, whether they have had a shot or not. The skin is the most valuable part of the prize, and out of it many useful articles are made, such as soles for their shoes, bags to carry grain and flour, and belts, &c. so that to get the first shot at the game is not only as much a point of honour as getting the brush in a fox hunt at home, but is also a source of profit to the lucky sportsman.

The bear is not held in much dread by the people of Kunawur, for in the season when they have young ones parties go forth to the chace with a few dogs and armed only with heavy *sticks*. When a bear with cubs is unkennelled by the dogs she at first makes off in great alarm, but as the dogs soon overtake and keep the cubs at bay until the huntsmen come up, she retraces her steps and wages war in defence of her young. Some skill and agility are now required by the hunters to avoid a hug, and at the same time to administer some weighty blows over the animal's head and snout, until having received a hearty cudgelling from the party, she once more makes off after her cubs, who have profited by the delay to get well ahead. The dogs however again overtake them, and again and again the poor mother returns to defend them, and receives a thrashing, until tired and exhausted she secures her own escape and leaves her offspring in the hunter's hands. Bears and leopards are sometimes killed by constructing an immense bow, charged with one or more arrows. A bait is placed to entice the animals, and connected with the bow string in such a manner that when seized the arrows are discharged into the animal's body, and with such force as often to pierce

it through and through. The skins are cured and sold at a rupee and two rupees each to the Tartars and Lamas, who take them to the upper districts and dispose of them at a profit, or make them into shoes, &c; opposite to Nachar, on the Kooloo side, the wild dog is also said to be abundant, but so difficult is it to get a sight of the animal that the natives never go in quest of it, and indeed they have such a fear of it that even if they found one, they would not fire, as they say if only wounded the whole pack turn upon the hunter and destroy him. In this there is doubtless much exaggeration, but nevertheless the idea, however erroneous, is sufficient to deter the shikarre from the chace. These dogs are also found in the forests of Chooara, where, hunting in packs, they destroy deer and other game; even the leopard and the bear are said to fly before them, and will not remain in the same jungles. They also attack the flocks, and commit great havoc. I heard of an instance where a shepherd lay in wait for their coming, armed with a matchlock, with which, from the shelter of his hut, he intended to shoot or scare them away from his fold, which they had on a former night attacked. Alas, however, for the weakness of human resolves, no sooner did the pack arrive than the shepherd's courage vanished, and like that of Bob Acres in the Rivals, fairly oozed out at the palms of his hands, and he was afraid to fire; for said he, very prudently, "Who knows if I only wound one but that they may pull down my house and attack me; no, no, let them eat their mutton in peace;" and so in truth they did, for the next morning the coward found twenty-five sheep killed and mangled by his midnight visitors. This animal is also said to exist in Chinese Tartary, and is called "Chungkoo."

It is in the forests of these lower hills, that the various beautiful species of the pheasant tribe are found, and none but the Chikore and gigantic partridge are seen in the upper portions of Kunawur.

On the 28th of May I left Nachar and travelled for a mile or two over a capital road, descending to the Sutledge, which I crossed by the Wangtoo bridge. This although dignified with the name of a bridge, is in truth no more than a good broad sangho; it is constructed entirely of wood, and consists of three or more long trunks of trees thrown across the river, the ends resting on buttresses of stone masonry, and supported by three rows of projecting beams or slanting piles. On these buttresses stand two covered gateways through which the bridge is entered on from either side; across the trees, are nailed planks of wood, and the sides were formerly protected by a slight railing, though it has now almost entirely disappeared.



The space of the sangho is the breadth of the river, or eighty feet, and its height from the water, which I measured with a plummet, was fifty-seven feet.

In former years before the invasion of Kunawur by the Goorkhas, a good bridge existed here, but it was broken down by the inhabitants of the districts, to cut off the communication across the river and check the advance of the enemy. It was never afterwards rebuilt, until the time of Capt. Kennedy, when the present sangho was thrown across.

According to accounts received from the natives, the present bridge was built by them, and Captain Kennedy on the part of Government furnished the means, to the amount of two thousand rupees. Others say that it was built at the suggestion of Capt. P. Gerard, when stationed as commercial agent at Kotgurh, with the view of facilitating the communication with Chinese Tartary and the upper portions of Kunawur, as the fleece of the Choomoortee sheep, called byangee wool, was then in demand, and purchased for the British Government.

The glen is at this point very narrow, and confined by the dark rocks of gneiss rising up abruptly on either side, and affording merely space sufficient for the bed of the river. Beneath the bridge the river rushes like a sluice, and has such a deafening roar that the voice of a person speaking on it is scarcely heard. From this, a short quarter of a mile brought us to the Wungur river, which runs down from the Kooloo side to join the Sutledge a little above the Wangtoo bridge; we crossed its stream by another sangho, and then addressed ourselves to climb the hill, which rose above us to the height of 2000 feet.

Up this ascent we toiled in a temperature of 98° over a road strewed thickly with the sharp cutting fragments of gneiss and granite, and wearied with the heat and fatigue of climbing in a midday sun. We felt vexed and disheartened on arriving at the top, to find that our labour had been all in vain, for on the opposite side of the hill the road again dipped down to the very edge of the Sutledge, while far away in the distance we could see a second long ascent to be travelled up ere we could find shelter and refreshment at the village of Churgong. The heat and length of this day's march were very painful, as the road often lay along the very brink of the river, the glare from whose waters was almost insufferable, which added to the fatigue of walking, or rather scrambling over the rocks and stones that were strewed along the banks, and the hoarse incessant roar of the foaming stream, completely fagged us all, and it was late in the evening ere my tent and baggage made their appearance.

Scarcely had we arrived at the end of the march, when to add to our discomfort a heavy thunder storm suddenly broke over us, obliging us to seek shelter where we could, and soaking my bed and other things which were still far in the rear. In the evening I witnessed one of the most beautiful rainbows I had ever beheld ; the sun was just dipping to the ridges of the hills, and shining on the vapoury clouds that were floating up the valley, caused the bright colours of the rainbow to stand forth most brilliantly, one end resting on the river's brink while the wide arch was thrown across the valley and was lost beyond the snow-clad summits of the other bank.

It was nearly opposite to this village, on the left bank of the Sutledge, that the conflict took place between the Goorkhas and Kunawurrees, in which the advanced guard of the former experienced so warm a reception as to make them glad to come to terms, and a treaty was accordingly entered into, stipulating that so long as the Goorkhas refrained from entering Kunawur, a yearly tribute should be paid to them. This treaty, I believe, was never infringed, and remained in force until the expulsion of the Goorkhas from these hills by the British forces.

My people were so tired with the long march from Nachar, that they begged hard for a halt at this place : as I was anxious to push on however, and the next stage was said to be a short one, I did not comply with the request, and accordingly proceeded on the morrow to the village of Meeroo.

Nearly the whole way was up hill, and in some places steep and rugged, but it got better by degrees, until entering a forest of prickly leafed oaks it became very good and continued so, although still up hill, to the end of the march. The heat and consequent fatigue of climbing steep hills under a burning sun were almost intolerable, and I wished many a time that we were among the snows which capped the range along whose sides we were toiling. Few things are more calculated to strike the naturalist, in wandering through the grand and beautiful scenery of these stupendous hills, than the almost total absence of living creatures ; days and days he may travel on, through woods that seem to promise shelter for every various form, so diversified are the trees and plants which they produce ; yet, save the crow, or the swallow as it skims along the open grassy tracts, scarcely a living thing is met with ; all seem to shun the intermediate heights ; and while the bear and leopard, deer, and goats, flock to the higher ridges near the snow, the various species of the feathered race cling to the lower woody tracts, where sheltered and secure they rear their

young. At Meeroo the temple was adorned with about twenty pairs of horns of the sikeen and wild sheep; the former animal is an ibex, and is said to have been once plentiful here among the snows, but of late years it has entirely disappeared from the neighbourhood. Some of the horns on the temple are of large size and were placed there by the fathers and grandfathers of the present generation, none of whom recollect seeing the living animal near the village, although there are some old men among them too. I inquired if I might take some of the horns, to which they replied with feigned astonishment, "they are presented to Devi, and who will dare to rob her temple?" I disclaimed, of course, all intention of *robbing her*, but suggested that as she had now possessed the horns for some time, she might perhaps be willing to take something else *in exchange!* To this they said, she could have no objection; and after a little bye play among themselves, a hoary headed old sinner stepped forward and informed me that "the devil was willing to sell his horns at two rupees a pair!" I agreed to give it, but on examination it was found that the whole batch of them were worth nothing, being quite rotten and decayed from age and exposure to the elements, so I declined taking them. The wild sheep is still occasionally found on the heights above the village, and sometimes also a stray *jahgee*, or horned pheasant. I had made repeated inquiries regarding the actual existence of an unicorn in any part of the hills, but although I found many who had heard of such an animal, and believed in its existence, I could meet with no one who had ever seen it.

Here however I encountered an old man who had travelled much in the interior, and various parts of the mountains, and who declared that he had once beheld the unicorn. I was of course all attention, and on the tiptoe of delight with the idea that I should now have an opportunity of describing this long considered fabulous animal, and of ending discussion past, present, and future, as to its existence. Alas, my visions were doomed to fleet away, for after a long and close examination, in which it was necessary to listen to a rigmarole history of the old man's birth, parentage, and education, and his never ending travels into Tartary to purchase wool, which he had done regularly every summer of his life for forty years, it turned out to be nothing more than an ugly clumsy rhinoceros which he had seen in the possession of the Rajah of Gurwhal, and which he described as being like an elephant without a trunk, and having a horn on its nose.

From Meeroo we had an up hill march all the way, and crossed the first snow at a stream over which it formed an arch, so hard and solid

that it did not yield to the tread, though the sun at 10 A. M. was shining on it at a temperature of 82°, while the stream beneath was as low as 38°.

From this spot commenced a long ascent over the side of a grassy hill, strewn with sweet smelling violets and the little scarlet "pheasant's eye," and near the summit of which we encamped, being about three miles from Rogee, which is the usual stage, but being situated off the road at half a mile down the Khud, I preferred staying where I was for the night. From this place we had a good view of the Burrenda Pass which was indeed apparently only separated from us by the deep glen through which the Sutledge flows; it was still thickly covered with snow, and looked like a deep notch cut in the snowy range. The hill above our encampment was also heavily covered with snow, from which throughout the day, immense beds or avalanches, loosened by the heat of the sun, were constantly precipitated into the glen below, or falling from rock to rock with a heavy and deadened roar like distant thunder, and resembling in their course some mighty cataract. Towards evening as the sun dipped behind the range and the first chills of night were coming on, these sounds gradually died away, and the snow became once more bound up by frost. The height of my camp here was 9,897 feet, and the little lagomys and the chough were now first seen among the rocks that overhung us; here too, I once more found the purple iris, discovered in my trip to the Burrenda pass, but it had not yet put forth a single bud. On the 31st of May I continued my march towards Chini, by a good road that continued to ascend for some distance, and at length brought us to an elevation where many beautiful plants of iris were in full bloom; it was the same as that found at my last encampment, and among them was a single root bearing a pure white flower, showing modestly among the deep purple of the neighbouring plants, like a fair bride surrounded by the gay and glad attire of the bridal train.

A little farther up the ascent, at about 10,500 feet, I took some splendid specimens of a new species of *peepa*, the largest of that genus I have yet seen belonging to our Presidency. They were adhering by a thin viscous plate to the stalk of a coarse grass, growing at the roots of juniper and a species of furze bush, the latter beautifully covered with yellow flowers. The species being new to science, I have given it the name of "*Peepa kunawurensis*," from the district in which I obtained it. Here too the rhubarb was growing abundantly, and as I had now tasted no vegetables for many days, I gathered some of the stalk and had an excellent stew for my dinner.

About three miles from Chini we came to a place where the whole hill-side had slipped away into the Sutledge, forming a mural precipice of several thousand feet from its base to the summit. The rock was thus a perpendicular cliff, and the road which leads along the face of it is a mere scaffolding, somewhat resembling that used by builders against the side of a house. Looking down from this exalted station the Sutledge is seen, narrowed by the distance to a stream, as it winds along below at the perpendicular depth of 4,000 feet. This though an awkward place to look at, and somewhat like walking in the gutter of a fourteen storied house in the "gude town o' auld Reekie," is nevertheless perfectly strong and safe, and almost capable of allowing two people to walk abreast, so that unless one wishes to look below into the yawning abyss, it may be passed over without having been once seen. That it is safe, may be gathered from the fact that flocks of sheep and goats laden with attah and grain, pass over it almost daily during the summer months, as also men; in fact it is the high road in every sense of the term between Rampore and Tartary.

Much has been said and written concerning the dangers of the way, but the road, taking it on an *average*, has hitherto been *excellent*, and though here and there, from stress of weather, it is at times a little broken and perilous, yet those places are so few, and continue for such short distances, that they cannot be allowed to characterise it, or to admit of its being called dangerous or even bad.

True enough it is, that one of these bad places may be the means of breaking a man's neck if he chance to slip, but the answer to that is, that he who cannot keep his feet, or who grows giddy at the sight of the depths below, has no business to travel over "bank and brae." The road is kept in repair by the zemindars of villages, by order of the Rajah, and much credit is, I think, due to them for the manner in which they perform the task; for with very little additional care to that which is now bestowed upon it, it might vie with any of those of the lower hills, and is even now superior to them in many parts.

There is no spot, in fact, even the worst, which a man ought to turn away from, and though I would not recommend a lady to try them, I can safely say, that I have crossed many a worse place in the khuds near Simla, while in search of objects of natural history. But after all, the difficulties of a road will be always estimated according to the imagination or temperament of the traveller; for he who is accustomed to mountain scenes, or to scramble over all places as they may occur, will laugh at that from which another man would turn away; habit is a great thing even here, and that which seems

dangerous at first, becomes nothing when one is accustomed to it. Thus it may happen that others shall follow in my path and laugh at that which I have called bad or dangerous.

The scenery from Meeroo to Chini is beautifully grand and imposing, the snowy range on the left bank being spread along the whole way like a fair white sheet, and raising its ragged outline far above all vegetation, till it attains, as in the bold giant peaks of the Ruldung group overhanging Chini, an elevation of twenty-two thousand feet above the sea.

The right bank of the river presents a marked contrast to this bold and awful grandeur, the hills receding more gradually and with a less shattered look, being thickly clothed to their very summits with noble forests of pines of many species, as the Kayloo, Neoza, Spun, and Cheel.

Chini, though a tolerable sized village for the hills, has a poor and ruinous appearance about it; it is situated in the midst of cultivation which is plentifully irrigated by streams from the snows above, which come dashing down in a sheet of foam as white as the snow beds from which they issue. Chini is rather the name applied to several small villages or hamlets scattered among the cultivation and resting on the slope of the right bank, than that of any one in particular. This is not uncommon in Kunawur, and occurs also at the next stage, where several are again comprehended under the one name of Punggee.

On the opposite side of the Sutledge, a few miles higher up its course than Chini, is situated the village of Pooaree, famous for producing the best kismish raisins in Kunawur. It is also the residence of one of the vuzeeers, and has a *joola* of *yák's* hair ropes over the river from which a road leads up to the Burrenda pass.

On the 1st June I proceeded to Punggee, where a number of my coolies whom I had brought from Simla became alarmed at the accounts they heard people give of the scarcity and dearness of provisions in Spiti, and refused to accompany me farther. Remonstrance and advice were alike thrown away upon them, and finding that neither promises nor threats had any effect, I gave the order to the Churriah to furnish me with the necessary number. On his announcing my order to them in the Kunawur language, a most amusing scene took place; men and women, old and young, threw themselves at once with such hearty good will upon my baggage, each scrambling for a load, that I fully expected to see half the things torn to pieces in the scuffle. After much noise and laughter each succeeded in obtaining something, and off they all trudged right merrily towards

Rarung with their burdens, joking to each other as they passed the astonished mutineers, who little expected to see me thus far from home so speedily supplied with carriage. In fact they had somewhat reckoned without their host, and thought that as I was so far advanced into the hills, they might safely dictate the terms on which they wished to be retained. Five of the number afterwards repented and followed me to the next stage, begging to be reinstated, which I granted, but fourteen others went back sulkily to Simla.

In Kunawur the women often carry quite as much as the men, and several of them marched along with apparent ease under burdens which the effeminate Simla coolies pronounced to be too heavy. One fine stout Kunawuree, whipped up in the scramble four bags of shot, amounting in weight to 56 seers, or 112 lbs, and carried them on his back the whole march, which is hilly and over the worst bye paths I ever saw, even in the hills. Two men had previously brought these same bags from Simla, and grumbled at the weight which was allotted to them, namely 28 seers each. The hardy Kunawuree demanded only two annas for his work, while the Simla men had refused to carry half the weight for three annas a day. While on this subject it may not be amiss to inquire why, since throughout Kunawur and all the neighbouring districts, the coolie demands but two annas per diem for his labour, those of Simla are allowed to refuse to take less than three? For two months and a half I had occasion to hire daily a number of these men at every stage; not one ever dreamed of asking more than a paolee, or two annas, nor was there hesitation and grumbling in lifting their allotted loads; each took his burden on his back and trudged merrily along with it to his journey's end. On returning to Kotgurh not a man would move under three annas, and all objected that the loads were too heavy, although the same had often been carried for long and fatiguing stages by the women of Kunawur. The weight allotted to each coolie is, by order, not to exceed thirty seers, but when was a coolie hired within the British rule, who did not hesitate and often refuse to carry twenty seers? They will come and lift the load, pronounce it too heavy, and walk off, and as far as I know, there is no redress for it, or at least I never heard of any one getting it. It is childish to fix a load at thirty seers and yet leave the coolies at liberty to reject half the weight if it so please them. The Kunawur coolie carries more, carries quicker, and demands less for his labour, than those within our rule; with whom the fault may lay, I do not presume to say, but it seems to me that a remedy for the evil might easily be found, by an order from

those in authority regulating the fare of a coolie to be two annas a day, marching or halting, and that any man plying as a coolie and refusing to lift a load not exceeding the regulated weight, shall be subject to punishment, or be turned out of the bazar, and not allowed to ply again. For the purpose of seeing these orders carried into effect, a coolie mate or police Chupprasee could be appointed from out of the many idle hangers on, of the Political Agent, and the coolies might be ticketed or licensed to ply. From Simla to Bhar, which is in reality but three marches, a greater imposition still exists, for no coolies will go either up or down under twelve annas, which is at the rate of four annas a day, and often the demand, when Simla is filling or people are returning to the plains, is one and even two rupees. In former days things were much better managed, for there are those still living in the hills who remember a coolie's hire to have been two annas marching, and one and a half halting. Now, however, every coolie talks of non-interference, and the rights of a British subject! and threatens you with his vakeel and a lawsuit, and many other combustibles besides.

There is perhaps no bazar in India where the European is more at the mercy of the native than in that of Simla, for there exists no Nerick of any kind, and I have heard it maintained by those in authority, "that a man may demand what he pleases for his labour or his goods;" which is in other words to say, that the native may be as exorbitant as he pleases, and the European must pay the piper!

No one can more warmly advocate the strict administration of justice between man and man, than I do, whatever be his colour, whatever be his situation in life; but it appears to me by no means either just or necessary to uphold the native on all occasions, or to consider the European as always in fault. Such a system tends materially to lower the dignity of the British character without in the least increasing the popularity of him who adopts it, for the shrewd native is ever willing to join with the European in the cry, "'Tis a very bad bird that befouls its own nest!"

But to return,—“The high road across the ghats from Punggee to Leepee being impassable from the depth of snow in which it was buried, I was obliged to change my route and proceed by a lower and more circuitous road to Rarung. On leaving the main road, we followed a by-path which dipped so suddenly and abruptly down the glen that it was with the greatest difficulty we could keep from sliding down the slope, so slippery was the ground from moisture and from the pine leaves strewed around. In some places indeed a single false step, or a



fall on the back, would have sent the unfortunate flying down into the foaming torrent below, at a rate as rapid as that of a slider on a "Russian mountain." We managed however, with much care and fatigue, to get slowly and safely to the bottom, where we crossed the river (which was furnished by the snows above) on a broken sangho, formed merely of four spars laid close together, and rendered slippery by the spray which was continually dashing over it. From this we again ascended by a road not many shades better than the one by which we had just come down, and it continued thus the whole way to Rarung.

We had also to cross many smaller snow streams, which being without sangho or stepping stones, obliged us *volens volens* to walk through them, sometimes nearly up to the knee in water, at a temperature of 38°, or only 6 degrees above the freezing point! It was indeed anything but agreeable, for we felt as if our legs were being cut off, and I vowed *coute qui coute* to cross the ghats on my return, whether they were blocked with snow or not. The forest all along this march was composed of Kayloo and Neoza pines. These names are only applied by the inhabitants of the lower hills and plains, the trees being known in Kunawur as the "Kelmung," and the "Kee," and the fruit or edible seed of the latter is alone called "Neoza."

From Rarung we had rather a better road than yesterday, but still bad, being chiefly over sharp blocks of granite and gneiss. This day we encamped at Jung-gee, and again proceeded on the morning of the 4th of June towards Leepee. The hills on the road from Punggee to Leepee have a shattered and decomposing aspect, vast masses being annually brought down by the action of the frost and snow, leaving in some parts high mural cliffs rising perpendicularly above the path to eight hundred and a thousand feet, while at their base is stretched a wide field of disjointed fragments of every size mixed up with beds of sand, decomposing mica slates, and felspar. These slope more or less gradually down to the river's edge, often at two and three thousand feet lower than the base of the cliffs. If a snow stream happens to descend near these accumulations, its waters are turned upon them by artificial drains, and in a few short months the former barren waste is seen to smile with young vineyards and rich crops of barley. But if, on the other hand, as too often happens, there is no stream near, the sands are left barren and dry along the river's course, sometimes increasing from fresh supplies from above, at others partially swept away by the force of the river when swollen by the melting snows in June and July. In the descent of these falling masses

whole acres are sometimes ploughed up, and the trees of the forest are crushed or uprooted by the rocky avalanche, more completely than if the axe had cleared the way for cultivation. This devastation is chiefly caused by the alternations of heat and frost ;—the power of the sun during the day acting on the beds of snow, causes innumerable streams to percolate through the cracks and crevices of the rocks and earth, which being frozen again during the frosts of night, cause by expansion the splitting of the granite into blocks, which being loosened by the heat of the following day from the earth which had tended to support them, come thundering down with fearful rapidity and irresistible weight through the forests which clothe the mountain's sides. After proceeding somewhat more than half way to Leepee, my guide, whose thoughts were " wool gathering," very wisely took the wrong road, and led me down a steep glen, at the bottom of which had once been a sangho across the stream, and the road from it was a somewhat nearer route to Leepee ; but alas ! when we arrived at the bottom the torrent had washed away the bridge, and although we might have forded the stream, we learned from some shepherds that it would be labour lost, as the road up the opposite side of the glen had given way and followed the bridge down the stream, so that it was impassable. In this dilemma we had nothing left for it, but to reascend on the side we were on, and the shepherds gave us some comfort, by saying we need only climb up a little way, when we should find a path. To work we went accordingly, setting our faces to the hill with a willingness that did not last very long, for we found that the short way of a Kunawurree was something like the " mile and a bittock" of bonnie old Scotland, " aye the langer, the farther we went."

This was truly the steepest hill-side I had ever encountered. Without the vestige of a path or any track, up we toiled, now grasping by the rock, and now by the roots of shrubs or tufts of grass, until at last it got so bad that we could scarcely proceed at all, partly owing to the steepness, and partly to the slippery nature of the pine leaves which thickly covered the soil. At several places the first up was obliged to let down a rope or a part of his dress to assist the others up. After a time, however, as we approached the top of the hill, and when well nigh exhausted with fatigue and heat, the ascent became more easy, and at last we debouched from the forest of pines upon a large open, swampy tract, immediately below the snows, which supplied water for a hundred rills, studded with a small yellow flowered *ranunculus* that I have some recollection of having seen in

similar situations in Europe. There were here many plants familiar to me, as the strawberry, the little pheasant's eye, the mare's tail, and a plant in search of which many of us in our boyish days have wandered through the fields of old England, in order to feed our rabbits, it is known, if I forget not, by the name of "queen of the meadows," or "meadow sweet," and grows abundantly, as it does here, by the side of ditches and brooks. The currant, wild rose, and dwarf willow were plentiful also, especially the latter, for which the swampy nature of the ground was particularly genial and adapted. Here we at length found the path for which we had so long toiled in vain, and now when found, as often elsewhere happens, it was not worth the trouble it had cost, being but a mere sheep track along the side of a decomposing and crumbling hill, where the footing was as insecure as well could be, and where the prospect below was inevitable death to the unfortunate who should misplace his foot or lose his balance. Time and care however took us safely to Leepee, where I was right glad to find my tent pitched; and as the Himalayan ibex or sikeon was said to be found in the neighbourhood, I determined to make it an excuse for halting a day or two. This measure had moreover become somewhat necessary, for the toil and fatigue of climbing over such broken and rugged paths as we had travelled for the last three or four days, in the heat of the noonday sun, when the thermometer generally indicated a temperature exceeding  $95^{\circ}$ , had brought on so severe a pain in my right side, that often I found it absolutely necessary to lie down for awhile on the ground, until it had somewhat abated. This, added to a severe cold, caught from the necessity we were sometimes under, of wading when profusely heated with walking, nearly knee-deep through several streams, whose waters having only recently left the beds of snow above, caused the thermometer to stand at the cooling temperature of  $38^{\circ}$ , made it necessary that I should take a rest, and while doing so, I determined to dispatch men into the upper glens in search of the long wished for ibex.

On arriving at my tent I made immediate inquiries for sportsmen, or shikarrees, and heard to my dismay that the only man in the place who knew how to handle a gun, had gone "away to the mountain's brow," to sow phuppra seed for the autumn crop. Seeing my disappointment at this unexpected piece of bad news, a little dirty, half-clad urchin offered to start off to the shikarree and tell him that a "Sahib" had arrived, which news would of itself be sufficient to bring him down. I asked how far he had to go, and when he would be back? to which he replied, "It is eight miles going and coming, but

we'll be here by sunset! At this time it was one o'clock in the day, and the first four miles were up a hill that appeared in the distance to be almost inaccessible to anything but the ibex itself, yet the hardy little mountaineer was true to his word, and returned before sunset with his friend the hunter. He was a black-faced, short, square-built fellow, with scarcely any perceptible eyes, so shaded were they by his bushy projecting eyebrows, and high cheek bones. He was well clad in woollen clothes, and round his waist was fastened a brass chain, from which was suspended a steel, a powder flask, and a long sharp knife. He was a hardy looking fellow, and from his frank and easy manner evidently one who could boldly look danger in the face, and who knew how to meet it like a man. He was as keen and anxious for a brush with the ibex, as I was to obtain one, so that powder and balls being furnished, he declared his readiness to start by break of day. As to my attempting to go with him, he laughed outright at the idea, and said at once, unless I staid where I was, he would not go, for I should infallibly break my neck, and spoil his sport into the bargain.

The chase of these animals is one often attended with great danger, from the inaccessible nature of the cliffs among which they love to roam, and there are few who are hardy enough to follow it. Often the hunter is obliged to crawl on his hands and knees along some ledge of rock projecting over a glen or chasm of several thousand feet in depth, and from such a spot laying on his belly, snake-like, he draws himself along, takes aim, and fires on the unsuspecting herd. If the shot be successful, it is still a matter of much difficulty and danger to procure the quarry, from the steepness of the rocks among which it lies, and too often the last struggle of departing life causes it, when almost within the hunter's grasp, to slip off the ledge, and fall headlong with thundering crash down into the yawning gulph, a prey to the vulture and the crow. These animals are sought for chiefly for their skins, which are either sold or made into shoes, &c. and the horns are presented as an acceptable offering to the deity, and nailed upon the walls of the temples.

Matters being soon arranged, my sturdy friend departed to the hunting ground, accompanied by a shikarree whom I had brought with me from Kotgurh, promising to do his best, but saying that most likely he would get nothing, as the summer season coming on, caused the animals to retire to the last ridges of the mountains, where no man could follow them.

About sunset on the following day, my own shikarree returned

with a long and rueful countenance, and announced the unsuccessful termination of the day's sport. They had found a small herd, chiefly of females, and had each a shot, but with no other effect than that of scaring away the game, and nearly throwing the Leepee hunter over the cliff, for the English powder I had given him caused his match-lock to recoil so violently, that both were nearly taking flight to the depths below. On inquiring for my flat-faced friend, it appeared that he was ashamed to face me again empty handed, and therefore had stopped on the hill-side for the night, at a shepherd's hut, from whence in the morning he could easily repair to his sowing in the heights. I sent him next day a large clasp knife, with a message to be ready for me on my return, when I would give him a chance of retrieving his character as a shot. His son, who undertook to deliver the knife, seemed highly delighted with the present, and declared that I should have a specimen of the sikeen on my return, but alas, as will be seen hereafter, these promises were fated to be broken.

On the 6th of June I resumed my journey, somewhat recruited by the day's rest I had enjoyed, and proceeded by a steep ghat to Labrung and Khanum. Descending to these places from the summit of the pass, the road lay through a scattered forest of Neoza and Kayloo pines, intermingled here and there with the cedar of Kunawur, the first specimen of which we saw at Leepee. It appears to be a species of juniper, and sometimes attains a goodly size, though generally it is dwarfish, and crooked in the extreme. The names by which it is known in Kunawur and Hungrung are "Lewr," and "Shoor;" its wood is esteemed as incense, and offered by the Lamas to their gods. Small quantities of it are also burned to charcoal and used in the manufacture of gunpowder. The planks obtained from it are used in the construction of temples, and they are sometimes also in demand at Simla, to make boxes with. Scattered over the more open parts, were beds of juniper and tilloo (also a species of cedar used as incense) and the yellow flowering furze already seen near Chini.

After an easy march we encamped at Labrung, a small and filthy looking place, built on the edge of a shelving hill. The town of Khanum is of goodly size, and stands opposite to Labrung, the two places being merely separated by a narrow glen. In this town many Lamas reside, but at the time of my arrival the principal of them had gone to Simla in the train of the Rajah, or in other words, "the chief had put his tail on," and their presence was required to form part of it.

The season here appeared to be far behind those of the lower parts of the district, the barley being yet green and far from ripe, while

below it had long been reaped and housed. Khanum is said to produce the best sooklat, or woollen cloth, of any town in Kunawur; it is made chiefly of the byangee wool, or fleece of the Choomontee sheep, in Chinese Tartary.

From Labrung there are two roads to Soongnum, the next stage, one lying along the base of the hills, which is very bad, and merely a bye path; the other crossing the Koonung pass, which although quite practicable, was represented as being still deeply buried in snow. My people however declined attempting the heights, and preferred taking the lower road, so I started alone with the Churriah and a guide across the mountain path.

The ascent is long and steep, as may be gathered from its crest being 5,212 feet higher than our last encampment; it is however far from difficult, and the road is excellent, but unfortunately at this season we saw nothing of it above 13,000 feet, as it lay buried in the snows, which were spread in a broad white sheet over the whole range. Following the traces of a flock of sheep which some days previously had crossed the pass, we managed to do well enough without the road.

From Labrung we first ascended through a forest of Kayloo and Neoza pines, beneath which were spread vast beds of junipers and furze, with here and there a few fine currant and gooseberry bushes loaded with small green fruit, but as yet far from ripe. Farther up, these beds of junipers increased, and were intermingled with another species growing more like a bush, and the same as is known at Leepee by the name of Tilloo.

Gradually as we mounted up the hill, the pines decreased in numbers and in size, dwindling at length to dwarfish shrubs and ceasing altogether at about 12,500 feet of elevation. Here first began the snow, lying in large fields or patches, and uniting at about 13,000 feet into one broad unbroken sheet, from whence to the summit of the pass, or 1,500 feet more, it continued so. The depth generally was not great, though in some places up to the middle or even higher; where it had drifted or had been hurled down in avalanches from above, of course the depth far exceeded the stature of a man.

The only danger in crossing these fields of snow at this season, when the thaws commence, is for loaded people, for if they fall in deep or broken snow, they run a risk of either being smothered beneath the weight of their burdens, or of losing the things they carry. The fatigue however, even to us without any loads at all, was great and distressing, owing to the steepness of the latter part of the way, for the path which winds gradually to the crest being lost to sight, we were

obliged to steer for the top of the pass by a direct line upwards, and the uncertain footing we obtained in the snow, which constantly gave way beneath our feet, caused us to slide backwards down the hill for many yards before we could stop ourselves again. The sheep track too, which had hitherto been our guide, at last failed us, and we journeyed on by guess; we had however the whole day before us, and a bright unclouded sky, so it signified little how long we took in ascending.

About 800 feet from the crest of the pass, I observed in the snow the prints of feet, which at first I thought were those of a man, but the deep holes made by long claws at last arresting my attention, I found on a closer inspection that they were the traces of a bear. Well knowing that in dangerous places the instinct of a brute will often lead him safely through difficulties where man with all his knowledge would fail, I hailed these traces as an assurance of our safety, and at once unhesitatingly committed myself to bruin's guidance; nor was I wrong, for following his footsteps, they gradually led me beyond the snow, and were lost.

The crest of the ridge was uncovered for about 50 feet on the southern slope, and here we again found the road, which was visible just long enough to assure us that we were in the right direction for Soongnum, and then again disappeared beneath the snows on the northern side. I have often been told by shikarrees that there are two species of bears in the hills, a black one which feeds on fruits and grain, and which is the common Thibet species, (*Ursus Thibetanus*) and another of a reddish sandy colour, which is only seen on the confines of the snow; this species is said to feed on flesh. It is curious that the traces of the bear on Koonung pass should have been exactly on the line of direction taken by the flock, whose dung being scattered occasionally on the snow shewed that they too had gone the way that we afterwards by bruin's direction followed. It would seem at least to give some colour to the assurance that this bear lives upon flesh, for from the foot of the pass on either side, that is, from 12,500 feet to its crest, which is 14,508 feet above the sea, there was not a blade of grass perceptible, and only here and there, where the snows melted or slipped away, were a few plants of a species of "*Potentilla*" beginning to show themselves. If then this bear lived upon vegetables, he had nothing here but the junipers and furze. It could scarcely be possible that he had scented the grain with which the sheep were laden. The Churriah who accompanied me from Rampore, and who lives near Nachar and Tranda in Kunawur, declared that the two bears were of the same species, and that both lived on flesh as well as vegetables,

often attacking the flocks and even cows during the severity of winter, and that he himself possessing flocks, knew it to his cost. In this case it is most probable that the animal had left the forest below the pass, and traced the sheep by the scent they had left on the snow.

On gaining the summit of the pass, the thermometer only indicated a temperature of 45° at 10 A. M., and a cold keen wind was blowing from the southward. From this elevated spot we looked back over the snow-clad mountains, beneath whose summits or along whose sides we had for several days been travelling.

Viewed from this height they appeared to be nearly on a level with ourselves, and wearing a look of cold and dreary solitude, which gave a sternness to the scene not altogether pleasing to behold, as one could not help experiencing a feeling of loneliness and melancholy at the thought of losing the way, or being benighted on their hoary summits. Rising conspicuously above the rest were seen the mighty Kuldun peaks, presenting in the glare of noon a dazzling whiteness that pained the eye to view; beneath this group we had encamped at Chini.

“Far as the eye could reach, or thought could roam,” all was one broad unvarying waste of snowy peaks, unbroken by a single shrub or tree, except in the depths of the darkly wooded glen, which stretched along the bottom of the pass where we were standing. Not a sound nor a rustle even caught the ear, save the rushing of the keen wind that was drifting the snow in wreath or spray before it; not a living thing was seen to stir amidst this wild and majestic scenery. All was so calm and still that it chilled one to behold it, and but for the ragged and shattered peaks around, which told of the fearful warring of the elements upon their crests, the traveller might almost suppose that the elevation had carried him beyond the strife of storms, to which this lower world is subject. It is amidst scenes like these, where words cannot be found adequately to describe the grandeur and magnificence that every where delight the eye, that man is led involuntarily to acknowledge his own comparative weakness and insignificance, and as he views the stern cold majesty of the wintry and never fading waste of snows by which he is surrounded, spite of himself his thoughts revert to Him, the impress of whose mighty hand pervades the scene, and by whose merciful care alone, he is guided safe through countless and undreamed of dangers.

From the crest of this pass, looking north-easterly, we beheld far below us, at the depth of 5,000 feet, the town of Soongnum, to attain to which we had still before us a tolerable day's journey. On making



some remark on the length of the route from Labrung to Soongnum, the guide now for the first time informed me that it was usually made in two marches, but fearing that I should feel it cold if I slept a night on the pass, he had not told me so before, least I should have halted there. Tired with the ascent, and the toil of climbing over the slippery snow, I did not feel the least grateful to him for his consideration, which I plainly saw was more on his own account than on mine; however, as revenge is sweet, I had some consolation in the thought that he had eaten nothing that day, while I had already breakfasted, and that he would consequently be preciously hungry before he reached Soongnum. However, there was now no help for it, for the baggage had gone by a different road, so onwards and downwards we must go.

From the spot where we stood, to fully two miles and a half below us, was spread one pure unbroken sheet of driven snow; beyond this for half a mile more it was broken and lying in detached masses. No vestige of a road was seen of course, until far below where the snow had ceased. There was however no danger, although the descent was somewhat steep; and the guide setting the example, we seated ourselves on the snow, gave a slight impetus at starting to set us in motion, and away we went on the wings of the wind, at a rate which seemed to the inexperienced to argue certain destruction. I had not gone very far, when I began to feel my seat rather *moist* and *chilly* from the melting of the snow, and by no means pleasant to the feeling, so I dug my heels well in, and brought myself to a stand still. Another of the party wishing to follow my example, and not sticking his heels firm enough into the snow, toppled over from the rapidity with which he was descending, and rolled away heels over head a considerable way down the hill, amidst the shouts of laughter, which we sent after him. He got up as white as a miller, with his eyes, mouth, and ears, crammed full of snow, and affording a capital representation of "Jack Frost."

Walking, although requiring some care to keep myself from falling, was far preferable to the chilly seat; and after sundry slips and slides, I succeeded, much to my satisfaction, in reaching a spot where the snow had melted away. But my situation after all was not much mended, for the cutting wind that was blowing from the pass, soon converted my moistened inexpressibles into a cake of ice, which was infinitely worse than the melting snow, and my legs and feet soon became so benumbed by the cold, that it was painful to move at all. Seating myself once more, by direction of the guide, I took off

my shoes and socks, and proceeded with a handful of snow to rub my feet and ankles, which although somewhat painful at first, soon restored them to a healthy glow, and then by jumping and fast walking backwards and forwards, I was enabled shortly to start again, and proceeded downwards by a path infinitely more dangerous than the snows we had just quitted.

Junipers and furze were the only signs of vegetation until we again entered a thin forest of pines lower down, through which we continued to descend until we crossed the Kushkolung river below by a capital sangho, and soon after arrived at Soongnum fairly fagged.

The fatigue of this double march may be readily conceived by those who have scaled the rugged sides of the hoary headed Ben Nevis of our fatherland; the height of that mountain above the sea does not exceed that of Subathoo in the lower hills, or about 4,200 feet, and its ascent and descent, if I recollect aright, occupies from  $3\frac{1}{2}$  to 4 hours. Here we ascended from Labrung to the height of 5,212 feet, over snows which were incessantly giving way beneath the feet, and causing us to slip backward many paces, added to which was the glare from the sun, which tended not a little to increase our fatigue and discomfort. From the summit of the pass our descent was 5,168 feet in perpendicular height, but the sinuosities of the road made the actual distance travelled from Labrung to Soongnum at least 15 miles.

When we recollect also that from the snow to Soongnum we travelled in a temperature of nearly  $90^{\circ}$ , the fatigue of the whole march can scarcely be conceived by those who have not experienced it. Our ascent and descent each exceeded that of Ben Nevis by one thousand feet, and there are few who have performed that journey who were not right glad to get a rest and a bit of fresh salmon, (to say nothing of the whisky toddy) at the snug little inn at Fort William. We left Labrung at six o'clock in the morning; at 10 A. M. we reached the pass; from thence to the bottom of the snow occupied us till noon, when the thermometer indicated  $89^{\circ}$ , and from thence we arrived at Soongnum at half-past 2 P. M., making the whole time from Labrung to Soongnum, eight hours and a half; or allowing at least two hours for resting and looking at the scene, we performed the actual distance in six hours and a half.

The coolies who had gone round by a lower and somewhat longer road did not arrive until 5 P. M., when they begged for a halt the next day, which I readily granted, as much on my own account as theirs, for the nature of the road from the snow to Soongnum was as if all the sharpest stones in the country had been collected there.

by which not only were my shoes cut to pieces, but my feet blistered and swollen also.

On entering the town of Soongnum I was met by a son of the vuzeer, who welcomed me with a plate of raisins, and escorted me to a small bungalow of one room, built long ago by a Dr. Wilson. Shortly afterwards the vuzeer himself paid me a visit, and proved to be no less a person than the frank and honest Puttee Ram, the friend of Dr. Gerard, and the source from whence he derived much of his information regarding the higher portions of the hills towards Ladak and Chinese Tartary. He has only lately been raised to his present rank. Time has not slept with him, nor failed to produce upon his hardy and once active frame its usual effects. He is now grey and bent with age, and his sons have succeeded him in their trade with the people of Choomontee and Ladak. The old man entered at once into a history of his acquaintance with Dr. Gerard and Mr. Fraser, and talked with pride over the dangers he had encountered with the former in their rambles through Spiti and its neighbourhood. He asked me if I had ever heard his name before, and the old man's eyes actually sparkled with delight, when pointing to an account of one of Gerard's trips, I told him his name was printed there. He has not only been a great traveller through the upper hills, but has also visited Kurnal, Delhi, Hansi, and Hardwar, though like all true mountaineers he sighed for home, and saw no place in all his travels to equal his own rugged hills; and truly I commend him for his choice. He is a tall, strongly built, broad shouldered fellow, but hideously ugly, his eyelids being large and sticking out over his eyeballs like cups, beneath which his eyes are scarcely visible. He has indeed, a face as like a *mastiff's* as I ever saw one.

From him I obtained a man who understood the Tartar language, to accompany me through Spiti, and he assured me I should experience no difficulties, as there was now a road across some parts of the mountains where, as in the days when Gerard first visited those parts, there was none at all. He informed me also that the lake called Chummor-rareel was only four days' journey from Dunkur in Spiti, so I determined if possible to get a peep at it. On inquiring for fossils, he said that Spiti produced but few; chiefly ammonites (*Salick ram*) which were found near Dunkur, but that the best place to procure them was on the Gungtang pass, near Bekhur, but the Chinese were so jealous of strangers looking at their country, that if I went there I should not be allowed to bring any thing away. Besides this, the pass was at the present season impassable, and from the lateness and

quantity of the snow which had fallen, it could not be open before the middle of August. Hearing that the ibex was found at Koopa and at Poo,ee, in the neighbourhood of Soongnum, I again distributed powder and balls, and sent people to hunt them, telling them to have some ready by the time of my return. I made also some inquiries regarding the "excellent limestone" which Gerard says he discovered in this neighbourhood, and which the natives told him they should henceforth use in the construction of their buildings.

Puttee Ram said he recollected the circumstance I alluded to, but added that Gerard *had failed* in his attempts to convert the stone into lime. He had brought some fragments of it from the Hungrung pass behind Soongnum, and having made a small kiln, he burned the stone, but instead of producing lime it melted down into a hard slag. The experiment failed, and it has never been attempted since. At Soongnum during the winter months, the weather is sometimes very severe, the whole of the surrounding hills being enveloped in one white sheet of snow, often to the depth of several feet. The town, standing at an elevation of 9,350 feet, is completely buried during heavy falls. At such times the inhabitants assist each other in clearing their roofs from the weight of snow, which not unfrequently yield to the pressure, and are converted into a heap of ruins. To guard against the rigours of such a climate, is therefore the business of the summer months, at which season, accordingly, houses are stored with fuel and grass, and the leaves of trees are accumulated for the sheep and cattle, which are safely housed till the severity of the winter has passed away. At this season there is little, often no, communication between village and village, the inhabitants contenting themselves with clearing a track from house to house in their own villages, but not venturing beyond. This does not last, however, throughout the winter, but frequent thaws take place, succeeded by fresh falls of snow.

This description is generally applicable to all places in Kunawur, and the Churriah who accompanied me said he recollected three different years in which the snow had fallen ten feet deep, even so low down as Tranda and Nachar. At Simla, in the winter of 1835-36, the snow is said to have been upwards of five feet, and I myself saw on the 10th May, 1836, some of it still lying on the northern side of Jacko, on which Simla is built.

On the 9th of June I left Soongnum, and proceeded towards the first Tartar village of Hungo, by the Hungrung pass, which rises up behind Soongnum to the height of 14,837 feet above the sea. The road

led us up a glen by the side of a stream which had its origin as usual among the snows on the pass. The ascent although greater than that from Labrung to the Koonung ghat, was more gradual, and consequently much easier; nor had we so much snow to climb over, as at the former pass. The bushes in this glen, (for trees had ceased to grow) consisted of a great number of rose, currant, and gooseberry bushes, which yielded as we ascended higher on the mountain's side to furze and junipers. Towards the summit of the pass these were so thickly spread around, and the hill had such a gradual slope, that substituting furze for heather, the scene had much of the appearance of a Highland Muir, nor was this resemblance at all lessened when with a loud whistle up sprung before us from the covert some beautiful large partridges, whose plumage is very like that of the ptarmigan in its summer dress, being a mottled mixture of white and grey minutely pencilled on the back. These birds are known in the language of Kunawur by the name of "Bhair." They are found in abundance near the snows among the covers of furze and juniper, retiring as the season advances to the extreme heights of the mountains. They delight to perch upon some high projecting crag, from whence, surveying the country below, they send forth at intervals a loud and peculiar whistle.

On the crest of the pass, which we reached at half past 10 A. M., the wind was piercingly cold, and quite benumbed our fingers, the thermometer again standing, as at Koonung, at 45°.

The view from this spot was dreary enough; the town of Soongnum was lost sight of behind an elbow of the range, and on either side therefore nothing but cold bare hills were to be seen; neither village, cultivation, nor trees appeared to break the chilling waste of snows which spread around and far below us over every mountain's side; no signs of vegetation were to be seen, save the brown and withered looking furze, which even at this advanced season of the year had scarce put forth a single leaf.

The summit of this mountain is, as Gerard has truly stated, composed of limestone; but the reason of his failing to convert it into lime for economical purposes was apparent enough. The rock is one of those secondary limestones which contain large portions of clay and sand unequally distributed through them, sometimes occurring in detached nodules, at others disseminated through the whole. These limestones therefore from containing this foreign matter, refuse to burn into lime, but usually form a hardened slag, or vitrified mass within the kiln, which exactly corresponds with

the account given me by Puttee Ram of the results of Gerard's experiments.

Our path now again lay buried deep beneath the snows which were spread on the northern face in a sheet from the crest of the hills to many hundred yards below us. Here too, although it was both deeper and extending farther down than on Koonung pass, the gradual descent of the mountain's side made it far less fatiguing to walk over. We left the pass at eleven o'clock, and though we ran at a good jog-trot sort of a pace down the hill, it took us nearly three quarters of an hour by the watch ere we had cleared the first unbroken field of snow. Beyond this it was lying in patches, and here and there quite sloppy, so that my shoes, stockings, and half way up my legs were wetted through in a few minutes; lower down still, the water was running in deep streams from the snow, and as the track which had been dignified with the name of a road, was somewhat hollowed out on the mountain's side by the action of the feet of sheep and men, it of course formed a capital aqueduct, and accordingly a pure crystal stream ran along it, in which we were obliged to walk ankle deep (for there was no other safe footing to be had) for a couple of miles nearly, the temperature of the water being  $43^{\circ}$ , while that of the sun was burning over our heads at  $90^{\circ}$ . After about three hours walking and sliding by turns, we reached Hungo, a miserable ruinous village situated in a dreary glen at the foot of the pass, on a large and nearly flat tract of well cultivated land, at an elevation of 11,413 feet, and about 3,624 feet below the crest of the Hungrung pass. The snow was lying in a solid mass from the top of one of the glens arising from near the summit of the surrounding heights, down to within 150 feet of Hungo. This is however a most unusual occurrence at this season of the year, the snows having generally all disappeared from these heights by the beginning or middle of May, excepting in some of the deep recesses and ravines at the very summit of the range. Not a tree was to be seen, even at this elevation, except a few sickly looking poplars on the banks of a stream below the village, all of which had been planted there by the hand of man. The hills rising immediately behind this village are not however bare and barren, but are well covered with the furze already mentioned, which was just beginning to put forth its beautiful yellow flowers. Along with it was another species which until to day we had not noticed; it is smaller than the other, bears the same yellow flower, and extends to a much greater elevation; both are called "*Tama*," but the last mentioned is distinguished as "*Cheenka Tama*" or Chinese furze. The other species is termed by Gerard

“Tartaric furze,” but the name is scarcely appropriate, since the plant is equally abundant over the higher hills of Kunawar, as on those of Tartary; and from the extensive range it takes, the name of “Himalayan furze” would suit it better. Besides which the species most common to the heights of Tartary is that known to the natives as the “Chinese furze.” Both these species are cut and dried in the summer months, and form nearly the only fuel the Tartars are possessed of.

Lower down the glen, the hills assume a more desolate appearance; the furze grows scantily and at last fails altogether, leaving a bare and crumbling soil, which is annually precipitated in quantities by the action of the weather into the stream which winds its way down to join the river Lee. Over the upper part of these hills the furze is also abundant, as well as an aromatic plant, which furnishes an excellent pasturage in most of these elevated regions, where grass is either scarce or not at all procurable, to large flocks of sheep and goats, as also to the cows and yâks, which are seen sometimes, to the traveller's danger and dismay, scrambling along the whole hill-side, and hurling down stones and fragments of rocks directly on his path. It often happens too that large masses are detached by the action of the frost, and come tumbling down with a thundering crash into the glens below, rending and tearing up the soils in their descent, and scattering the fragments in volleys into the air. One of my coolies had a narrow escape from a fragment of rock, below the Hungrung pass; a mass that had hitherto been supported by the bed of snow into which it had alighted from above, was now by the thawing of the snow again let loose, and came bounding down the hill with horrid crash, until striking on a projecting crag, it was shivered into fifty fragments, one of which fell in a direct line for the coolie, who frightened at the sight, and hampered by his load, fairly stuck fast to await the coming blow. By the greatest good luck he escaped unhurt, though the stone alighting full in the kiltah on his back rolled him head over heels down the side of the hill. He soon recovered himself, however, when it was found that the only damage done was a crushed leg, not of the coolie, but of *mutton*; my provisions being in the unfortunate kiltah.

On crossing the Hungrung pass a most remarkable alteration is observable in the aspect of the country. The range on which the pass is situated forms part of the northern boundary of Kunawur, separating it from the Tartar district of Hungrung, now forming a portion of Bussaher, although evidently at some former period it has been sub-

ject to, and constituted with the Spiti district an integral part of Chinese Tartary.

The change in the nature of the country is most sudden; looking from the summit of the range in a northerly direction over Hungrung, the country is seen to wear a sad and sombre air of cheerless desolation; not a tree is to be seen, and the black and crumbling hills are either wholly barren, or clothed with nothing of larger growth than the dwarf willow and the dog-rose. The hills are chiefly of the secondary class, and being more rounded in their outline, want the grand and almost terrific beauty of the towering granitic peaks which so strongly characterises the scenery of Kunawur. Villages are situated at wide intervals from each other, and cultivation is wholly confined to the immediate vicinity of them, and usually upon a confined patch of alluvial soils, evidently the deposits of some former lakes. The practice of cultivating in steps upon the mountain's sides, appears indeed to be almost universally neglected, which however is most probably owing to the nature of the hills themselves.

On the southern side of this range lies the thickly wooded district of Kunawur, where cultivation is often carried in steps nearly to the summit of the mountains, and presenting a rich and cheerful picture which delights the eye, and imparts a feeling of joyousness and security to the traveller, as he wanders on through forests of majestic pines.

From this difference in the appearance of the two districts and their inhabitants, it would seem as if nature had elevated or interposed the Hungrung range as a barrier between two countries, destined, for some purpose, to remain distinct; and furnishes to the inquisitive a source of speculative thoughts, from which it is difficult to draw any satisfactory conclusions, for the mind is almost involuntarily led to ask while contemplating this marked contrast, *why*, on the one side the forests should be allowed to advance actually to the mountain's base, while on the other not a single tree should be allowed to grow.

From Hungo, on the morning of the 9th of June, I proceeded to Leeo, which is a small village situated on the right bank of the Sing Pho or Lee river, in a basin or valley entirely surrounded by high granitic rocks. The spot has evidently formed part of the bed of a deep lake, the different elevations of the water being still apparent in the lines of rolled stones, which are seen on the hill-side, far above the level of the river.

The bottom of the lake, now furnishes a broad and level tract of land which is well cultivated, and from its warm and sheltered situa-



tion in the bosom of the hills, is highly fertile, producing in favorable seasons two crops, consisting of wheat, celestial, beardless, and common barley, with beans and peas. Apricots too are abundant, but this is the last village towards Spiti where they occur. The elevation is however only 9,362 feet, or about that of Soongnum in Kunawur.

From Leeo, I proceeded towards Chung or Chungo, leaving the village of Nako on the heights to the right. At Leeo we crossed the Lee by a crazy and not very agreeable sangho, the planks being so far apart that the water was seen rushing along at a fearful rate beneath, dazzling the eyes with the glare of the foam, as one looked down to secure the footing; a very necessary precaution, as the bridge from the bank slopes with a disagreeable curve towards the centre. From this we ascended to about 2,000 feet above the stream, which was a steep pull up, though luckily we had a cool and cloudy day. The road, which is very rocky and leads along the left bank of the Lee, lies generally over immense beds of fragments brought down by the elements from the heights above, and after one or two moderate ascents and descents, dips suddenly down, at the distance of nine miles from Leeo to the village of Chungo.

On the 12th of June I halted at this place for the purpose of laying in several days supply of grain for my people, in case we might not be able to procure any in Spiti, which, according to accounts we had received at Soongnum and other places in Kunawur, had been plundered of every thing by Runjeet's troops, after they had expelled the Rajah of Ladak. The Tartar guide, however, who accompanied me, declared the rumour to be false, as he had lately been in Spiti and found no lack of grain, and he therefore advised me not to burden myself with more coolies, which would be necessary if I carried supplies. In order to be safe I thought it advisable to carry a few days provisions in case of emergency, and lucky it was that I did so, for without them my people would on more than one occasion have had no food at all.

Chungo is situated in a basin somewhat similar to that of Leeo, but much more extensive; it is walled in as it were on every side by lofty hills, whose sides in many places bear witness to the former presence of a lake. Large beds of clay and sand enclosing rolled and water-worn pebbles of every size occur on all sides, while the flat and level bottom of the vale again furnishes a broad tract for cultivation. The elevation of Chungo is about 9,897 feet. It was once a populous and thriving place, containing nearly one hundred people, but for some

years past it has been on the decline, and is now half in ruins and deserted by most of its former inhabitants. The reasons for this falling off are entirely attributable to local circumstances.

The soil is a mixture of clay and sand, the latter predominating, and is a deposit from the waters of the lake which once filled the valley. The whole area formerly under cultivation might probably have exceeded one and a half mile square, although at present it scarcely equals one. Celestial, beardless, and common barley, wheat, phuppra, beans, and peas, constitute the crops, and one harvest is all that is obtained; which is not to be wondered at, when we consider that on the morning of the 12th of June, at sunrise, the thermometer indicated a temperature of 35°. Snow was still lying on all the surrounding heights, and fell throughout the day on the 10th and 11th of June. In former days ere the cold soil was exhausted by the constant growth of the same crops, Chungo was at the height of its prosperity, and could even export grain to other parts, so abundant were its harvests. But alas! too soon "a change came o'er the vision of its dream," and those days are gone, now never to return.

The constant drain upon a soil naturally poor and cold, soon changes its hitherto smiling and prosperous state to one of want and poverty. The barrenness of the surrounding hills, yielding not even a scanty pasturage to sheep and cattle, at once destroyed the chance of recruiting the soil, by depriving the cultivator of the only source from whence manure might have been procured; and thus, from gathering an abundant crop, the villager was first reduced to a bare sufficiency for the wants of himself and family, and finally obliged to leave his fields untilled, and to seek employment and subsistence in a happier clime. Many have thus emigrated into Spiti, Chinese Tartary, and other places, and their once well cultivated fields now exhibit a bare and hardened sand without one blade of grass, and strewed with the fragments of rock which the weather has hurled upon them from above. Could these people command annual supplies of manure, as is the case in many parts of these hills, Chungo would possess perhaps a finer cultivation than any village in Hung-rung. In Kunawur it is a common practice to mix up leaves and the young shoots of the pine trees with the dung of cattle, and this forms a capital manure for their fields, which would otherwise, in many parts, soon become nearly as impoverished as the soil of Chungo. They have moreover in most parts of Kunawur a rotation of crops, by which the soil is recruited, whereas at Chungo, one crop, and that the same for years, is all that can be produced. This village has not a tree near

it for two or three days' journey, save the usual sickly looking poplars, which are planted on the banks of rivulets and streams ; thus they are deprived of all manure both animal and vegetable, and their lands will in consequence go on dwindling from bad to worse until the place shall become barren and deserted.

The lands which are now under cultivation are coaxed to yield a scanty crop, by the annual small quantity of wheat and barley straws which are ploughed in, and by the addition of the small portion of dung which is obtained from a few goats and cows which graze on the edges of the fields, where grass and a yellow flowering lucerne spring up abundantly along the banks of the little rills, with which the fields are irrigated.

On the 13th of June, I again proceeded towards Spiti by a road which led us up the heights above Chungo. Many places on this day's march indicated the former existence of a deep water over the hills, at a height of 2,500 and 3,000 feet above the present channel of the river, which winds along beneath. Here the road stretches along the sides of hills shelving gradually towards the stream, along whose banks are wide and extensive level plains of several miles in area, and the hills receding on either side form a wide valley, bare of every sign of vegetation save the furze, the dog-rose, and the willow, with here and there a few dwarf bushes of the cedar. Trees there are none, and villages are now not seen for many days. All around seems cold and cheerless ; not a living thing to break the deep silent melancholy which pervades the scene, and the traveller feels chilled, and his spirits flag, he knows not why, as he wanders on through the dreary and barren waste.

How marked a contrast does the scene present to the rich and wooded regions of Kunawur ; here all is black and charred, and a mournful silence reigns around, unbroken save by the hoarse roar of the mountain stream, or the shrill whistle of the Bhair among the snows.

Journeying onwards from our last encampment, we came suddenly upon a deep rent or chasm in the rocks, through which at some depth below ran a rapid stream. Over this, from rock to rock a few loosely twisted ropes or withes of willow twigs were stretched to answer for the purpose of a bridge, and on these were placed large flat slabs of mica slate, apparently sufficient by their own weight alone to break through their frail support. Over this we walked, and though somewhat springy and unsteady to the tread, it was nevertheless perfectly strong, and is the only bridge for passengers and cattle. At a little distance from where we crossed, alarmed by the noise we made, up

started from among the rocks a small flock of *Burrul*, or wild sheep, which began leisurely to scale the steep sides of the glen, springing from ledge to ledge till they attained to a place of easy ascent, when, as if satisfied that they could bid defiance to pursuit, they stopped to survey our party. A shout from some one in the rear, again set them in motion towards the summit of the mountain from which we had just descended; the direction they took, lay right across the path, and just at the moment when they gained it, my shikarree came in sight, on a part of the hill above them, a shrill whistle from one of the Tartars caught the ear of the hunter, who was soon instructed by signs to blow his match and give chase.

From his greater elevation he was able to bring himself near the line the animals were taking, and at the same time to screen himself from their view until just within gun-shot, when they perceived him. In an instant a flash was seen, and the sharp crack of the matchlock, ringing in echoes among the rocks, told that the quarry had come within reach, and at the same moment off bounded the flock towards the most inaccessible part of the mountain. The shot however had not been fired in vain, for suddenly the leading sheep was seen to turn downwards and avoid the rocks, as if conscious that he had not power to scale them, and taking an easier and more slanting direction along the side of the cliff, he soon slackened his pace and laid down. The rest of the flock losing their leader turned downwards also and rejoined him. The shikarree in the meantime had reloaded, and was again warily stealing on from rock to rock upon his game, but they were now fully on the alert, and once more leaving their wounded companion, bounded up the rocks at a rapid pace. Again the bright flash of the matchlock was seen, but alas, this time there followed no report, and ere the hunter could reprime, the sheep had won the mountain's brow and disappeared. Nor had the wounded animal failed to avail himself of the chance afforded for escape, but scrambling along the side of the rocky glen, he was fast gaining on a place where a turn of the mountain would have screened him from our sight, when scrambling up a rugged and projecting ledge his strength failed him, and falling backwards with a cry of terror, we saw him, for a while quivering as he fell headlong from rock to rock, and was lost in the rush of waters at the bottom of the chasm.

No village occurring this day to bless our longing sight, we at length encamped, after a long march, on the side of the hill, at a spot where sheep are usually penned for the night when travelling with

grain. This spot was called by the Tartars Chungreezing, and here I pitched my blanket-tent at the height of 12,040 feet above the sea. We passed a cold and comfortless night owing to the high keen wind which came whistling down from the snowy peaks above us. At sunset the thermometer stood at  $48^{\circ}$ , and at sunrise on the morning of the 14th of June, again at  $35^{\circ}$ ! A nice midsummer temperature! what must the winter be? On the 14th we descended by a very rugged and precipitous pathway to the bed of the Paratee river, a branch of the Lee, which comes down from lake Chummor-rareel, through Chinese Tartary, and joins the latter river above Skialkur. This we crossed by the "stone sangho," as it is called, which is formed by several enormous masses of granite which have fallen from above, and become so firmly wedge into the bed of the river, as to form a safer and more durable bridge than any that could be constructed by the natives, and which from its great weight the waters are unable to remove. A small stream which runs down into the Paratee, a little distance below this bridge, is said to be the boundary line of Bussaher and Chinese Tartary.

Here then we were in the dominions of the celestial emperor, and as we crossed the sangho we were met by a deputation from the Chinese authorities, who demanded to know what were our intentions in entering their country, and how far we had determined to travel through it, intimating at the same time very politely, that they would "prefer our room, to our company," by telling us that we need expect no assistance or supplies of any kind. I had no intention of penetrating farther than was requisite into their country, but this being the only road yet open into Spiti, I had been necessarily compelled to follow it, as after all it merely ran across a corner of their territory for about a mile or so. Wishing however to ascertain whether, after having gone through the ceremony of prohibiting our advance to satisfy their rulers, they could not be prevailed upon to wink at our proceedings, I told this rough ambassador that I would require no supplies, nor take anything from the country, if he would allow me to proceed as far as Choomontee. His reply was evidently borrowed from the Chinese officers, and was worthy of the great Bombastes himself;—"When horns grow from the heads of men, and wool is gathered from the rocks; then may the Feringee advance,—but not till then!" This was too ridiculous to be withstood, and we enjoyed a hearty laugh, while the dignified officer strutted away, pleased with the assurance that I was only crossing into Spiti.

His words brought to mind the old Scotch ballad,

“ The swan, she said, the lake’s clear breast,  
 May barter for the eagle’s nest ;  
 The Awe’s fierce stream may backward turn,  
 Ben Cruachan fall and crush Kilchurn,  
 Our kilted clans when blood runs high,  
 Before the foe may turn and fly ;  
 But, I, were all these marvels done,  
 “ Would never wed the Earlie’s son.”—

And I thought it by no means improbable that the sequel might turn out after the same fashion ;—

“ Still, in the water lily’s shade,  
 Her wonted nest the wild swan made ;  
 Ben Cruachan stands as fast as ever,  
 Still onward foams the Awe’s fierce river ;  
 Before the foe when blood ran high,  
 No Highland brogue has turned to fly ;  
 Yet Nora’s vow is lost and won,  
 She’s married to the Earlie’s son.

and so it may be hereafter that the “ Feringee” shall tread those now forbidden scenes, though his head be unadorned with horns, and wool be not gathered from the rocks.

It appears however from the accounts of the people, that so many travellers have at different times wandered through the upper hills, without any apparent object, save that of looking at the country, that the suspicions of the Chinese have been kept on the alert, and they are more particular than ever in enforcing their orders, especially since Runjeet’s troops in Ladak have thrown out some hints of paying them a visit, when they have settled the affairs of their late conquest. There is however little chance of their carrying the threat into execution, as Chinese Tartary holds out to them no chance of plunder save its splendid flocks of sheep, which would easily be driven far beyond their reach, and leave them a barren waste for their portion.

Having crossed the stone sangho, we proceeded up the side of a hill by what the guide termed a road, though I could not distinguish it from the surrounding mass of crumbling soils. It got better, however, as we gained the top, and a short distance brought us to a small stream, across which we stepped out of Chinese Tartary into Spiti, dependent on Ladak. From this we travelled for some miles along the side of a bare black hill of decomposing shale, and then descending to a level plain of clay and rolled stone, we crossed a river which the Tartars called “ Gew,” from its passing a village of that name in Chinese Tartary. Above this river on the opposite bank, the beds of

alluvial clays towered up to some height, and the surface being flat and studded with a few bushes was pointed out as the usual halting place. As by halting here however we should have had a long and fatiguing march on the morrow to Larree, I thought it advisable to push on for another level spot, a couple of miles farther, where the Tartars said there was a stream of good water, and shelter beneath the rocks for all my people. The road now ran along the left bank of the Spiti river, at about 300 feet above its level.

The Spiti is a larger and finer looking river than the Sutledge, and the people of the country, as well as the Kunawurees who have seen the two, say that it is never equalled by the latter, except during the winter months, when the severity of the frosts in the districts through which the Spiti flows, causes a less plentiful supply of water to fall into it.

Its waters though rapid and muddy, have in general far less of that dashing violence which the Sutledge exhibits. This is most probably to be attributed to the nature of the country through which it flows. The Sutledge winding its rapid course among hard rocks of the primary formation, must often meet with obstacles, which cause it to break in impotent fury on its banks, in waves which hurl the spray far on high, curling and bubbling as it flows along over stones and boulders of various sizes.

The Spiti, on the other hand, though sometimes violent and rough, more generally glides along in a broad and rapid sheet through rocks belonging to the secondary class, and whose less firm and solid texture yields to the action of the current, which sweeps their crumbling fragments irresistibly before it.

The observations of Dr. Gerard also serve to corroborate the information furnished by the natives relatively to the two rivers. According to that traveller, the greatest breadth of the Sutledge at its narrowest parts where bridges occur is 211 feet, while at other places he measured it 450 feet across. This however is low down, and after the river has received the additional waters of the Spiti and Para, united in the Lee; the true comparison therefore cannot be formed, after the junction of the two rivers, but before.

At Skialkur, according to Gerard, the Lee in breadth was ninety-two feet, and in August he thought it contained fully as much water as the Sutledge, than which it was broadest, the latter river being at their confluence but seventy-four feet. The true comparison of the Spiti and the Sutledge, must be instituted however, before the junction of the Paratee with the former, and of the Lee with the latter,

and we consequently find from the measurements of the enterprising traveller already mentioned, that the general breadth of the Spiti was from 258 to 274 feet across.

In October, he states the quantity of water to be less than that of the Sutledge, which being the season when the rigors of winter have begun in Spiti, is exactly a result corresponding to the information derived from the inhabitants of the district.

After the waters of the Spiti and Paratee rivers have united to form the Lee, the Tartars usually apply to it the name of "Singpho," which in their language appears to signify "a river"; while smaller streams and muddees, are called "Rokpho," or nullahs. Each river is therefore distinguished by the name of the country through which it flows, or sometimes even by that of a village on its banks. Thus the Lee evidently derives its name from the village of Leeo, and is the "Lee-ka-Singpho"; the Paratee, rising from lake Chummor-rareel, and flowing through Chinese Tartary, is called the "Cheen-ka-Singpho," or "Para-ka-Singpho," derived from the Para or Paralassa mountains; and the Spiti is the "Spiti-ka-Singpho." The word Para signifies lofty, and thus Paratee is literally, "Lofty-water," or a "river of high source," "tee" signifying water in Kunawur. Paralassa would therefore appear to signify a lofty mountain range, as "Kylas" is known to signify lofty peaks in Kunawur. The Lingtee, a minor stream which joins the Spiti above Dunkur, but of which Gerard makes no mention; and the "Gew" flowing down from Chinese Tartary into the Spiti below Larree, receive the names of "Lingtee-ka-Rokpho" and "Gew-ka-Rokpho" both derived from villages on their banks. After resting awhile beneath the shade of an overhanging rock and refreshing myself with a few hard biscuits, and a draught from the turbid stream, we again set ourselves in motion, and a walk of two or three miles brought us to an extensive piece of level ground, where the guide said we were to encamp, and accordingly we halted, right glad to get a rest and shelter from the sun, in the shade of the rocks around us.

Creeping into the caves which are scooped out by the wandering shepherds as a place of shelter for the night, most of the party soon fell fast asleep, for we had travelled several miles in a temperature of 120°, and the glare from the rapid waters below our path, in conjunction with the heat from the rocks, tended to induce a feeling of languor and fatigue, which from the proximity of the snow on the heights above us, we had little expected to feel. We had thus wiled away about two hours in the arms of Morpheus, when we were aroused



by the noisy arrival of some of the people with my tent and baggage, and proceeding in search of water, we now first ascertained to our dismay that the stream was dry; fuel, too, another most essential necessary, was likewise wanting; so bestowing a few hearty growls on the Tartar for his stupidity, we once more proceeded in search of a snow stream and some bushes.

Luckily we soon came to a spot which furnished the latter, but as there was no stream near we were obliged to content ourselves with the water of the muddy river.

Here then we encamped once more on the hill side, without having seen the vestige of a habitation throughout this second day of our wanderings in Spiti. Around us, however, were plenty of rocks to afford shelter to my people in case of a storm or bad weather, and as the day was fine and warm, we managed to make ourselves tolerably comfortable in spite of muddy water, and a scarcity of fuel, which latter consisted solely of the dried stalks and roots of a small shrub growing among the rocks near us.

During the day's march we had passed over many level tracts of alluvial soils which seemed so well adapted for cultivation and villages, that I remarked to the guide my surprise that so much level land should remain neglected, while so much trouble was expended in Kunawur on strips on the hill side. He replied that many a longing eye had often been directed to these plains, but the difficulty or rather impossibility of conveying water to them, had deterred all from settling there.

These broad alluvial deposits are now all high above the river's course, and from the precipitous nature of the rocky banks within which it is confined, no aid could be derived from it.

Rain is here almost unknown, falling only like angel's visits, and even then so sparingly as to be of no use except to allay the clouds of dust for a few hours.

The only season, then, in which much moisture is obtained, is precisely that in which no vegetation can be produced, namely in the winter months, when falls of snow are both heavy and frequent, and continue often, more or less, from August till the end of April.

Of these broad flats the people would gladly avail themselves could water be procured to irrigate them, and smiling fields and prosperous villages would soon appear where all is now barren and desolate. On similar deposits are the villages of Leeo, Chango, Soomra, and Larree, built where streams flow down from the surrounding heights to fertilize the soil. They are, however, almost all subject to a great

want of manure, and their fields in consequence soon become impoverished, and do not yield a suitable return for the care and labour which are bestowed upon them.

Thus at each of these places, with the exception of Leoo, many fields once under cultivation are now left barren, and their owners have been compelled to seek that subsistence for their families in some more favoured spot, which their native soil denied them.

THOMAS HUTTON, *Capt.*

CANDAHAR,  
8th December, 1839.

*Assistant Paymaster and Commissariat  
Offit. S.S.F.*

ART. III.—*Notes on various Fossil Sites on the Nerbudda ; illustrated by specimens and drawings.*

In the following paper I propose to place on record the progress made in fossil discoveries from Hoshungabad up the Nerbudda river, to Jubulpoor, a distance of some 200 miles.

Hoshungabad has already been brought to the notice of the Society as a large deposit, a field zealously followed up by Major Ouseley, then in charge of that district, by whose exertions the upper jaw now laid before the Society has been brought to light, having served for years, unknown, as a Dhobee's board for washing clothes on, ere a cognoscent eye lit upon it; for at first, it had the appearance only of an oblong square mass of the conglomerate of the river, excepting at one small point, which led to its development and present form. I am sorry to say that some of the teeth were injured in entrusting the chiselling to a country gentleman, whose geological notions of matrix and fossil, were not matured. The teeth of this elephantine head are thought by a friend of mine, to belong to that species denominated African.

The second specimen laid before the Society, is that of a slender tusk, imbedded in the conglomerate of the river, the several pieces of which, joined together, amount to a length of five feet nine inches and a half. To what animal did this belong? The portion of tusks of elephants that we possess, being at least treble the present in circumference.

Next are drawings No. 3 and 9, frontal and base of a Buffalo skull, from the same locality; exhibiting in one, the condyles of the foramen magnum, orbit; portion of horn, and general base of the skull; the other shewing the massy forehead, (nearly eleven inches between the orbits), and angle of the horn in contrast with the Bovine skull to be noticed hereafter.